

# MARINE RECORD

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## LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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### ACTION OF THE EXECUTIVE AND BILL OF LADING COMMITTEES, CLEVELAND, APRIL 11, 1899.

The proceedings of the Buffalo conference, March 8th and 9th, 1899, having been duly considered, the Lake Carriers' Association unanimously agreed upon the following action:

First.—Each vessel owner may, if he so desires, at the time he charts the vessel, provide for an individual consignee at lake destination, and he may stipulate that if his vessel is sent to more than two elevators to load, the extra service shall be without expense to the vessel.

It is believed that delays at ports of loading may thus be remedied to a great extent.

Second.—The following provision should be included in all lake grain bills of lading:

"If the grain covered by this bill of lading is consigned in care of a party at destination of vessel, then, unless the original of this instrument is there presented for cancellation on or before arrival of vessel, delivery to the party in whose care the grain is consigned herein, shall be a good and valid delivery."

Third.—The Lake Carriers' Association accepts the offer of the commercial exchanges tendering the services of their respective Boards of Arbitration without expense to the Lake Carriers' Association, to hear and decide any claims the Lake Carriers' Association may desire so heard and decided, in respect to any exceptional detention for which the lake carrier deems it just that demurrage should be paid by the party or parties responsible for such detention, or in respect to any exceptional grain shortage for which the lake carrier claims he should be relieved from liability.

Fourth.—The Lake Carriers' Association will appoint a committee of three of its members, resident in Buffalo, to act in consultation with the Committee of Control, provided by the Western Elevating Association, in securing prompt dispatch in unloading grain vessels at the port of Buffalo.

Fifth.—The grain trade having objected to the shortage clause which the Lake Carriers' Association proposed to insert in the lake grain bill of lading upon the ground that the commercial value of the bill of lading for collateral uses would be impaired, the Association has decided not to insist upon the use of the proposed clause, but to allow the existing shortage clause to stand unchanged until the close of the present lake season. The Lake Carriers' Association then hopes to present a definite and reasonable shortage provision, that will not be subject to objection by the grain trade upon the ground of uncertainty in use.

Sixth.—No clause providing for the payment of demurrage will be inserted in the lake grain bill of lading this season.

The detention clause proposed at the Buffalo conference as a substitute for the demurrage clause, will be modified in consultation with the counsel of the Lake Carriers' Association, so as to express correctly the practice which it is understood will, by mutual agreement, govern the unloading of grain cargoes at grain delivery ports this season. The secretary of the Lake Carriers' Association will then submit the detention clause, as modified, to each vessel owner for vote as to the advisability of inserting said clause in lake grain bills of lading after a named date.

Seventh.—It is understood that the grain trade, rail carriers and elevators, will co-operate in every reasonable way to correct abuses in the matter of shortage and detention and to secure dispatch to vessels at ports of loading and unloading.

C. H. KEEP, Secretary.  
Lake Carriers' Association.

### NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—WISCONSIN.

TREASURY DEPARTMENT,  
OFFICE OF THE LIGHT-HOUSE BOARD,  
WASHINGTON, D. C., April 15, 1899.

KEWAUNEE PIERHEAD RANGE LIGHT STATION.—Notice is hereby given that, on or about April 26, 1899, the structure from which the rear light of this range is shown, on the north pier at the entrance to Keweenaw harbor, westerly side of Lake Michigan, will be moved about 200 feet east-southeasterly along the pier toward its outer end. The distance between the lights of the range will then be 200 feet.

The approximate geographical position of the rear light will be:

Latitude, North, 44° 27' (33");  
Longitude, West, 87° 29' (39").

By Order of the Light-House Board:

FRANCIS J. HIGGINSON,  
Rear Admiral, U. S. Navy, Chairman.

### WHERE ASBESTOS IS PRODUCED.

Asbestos is a physical paradox, yet one of nature's most marvelous productions. It has been called a mineralogical vegetable; it is both fibrous and crystalline; elastic, yet brittle; a floating stone, which can be readily carded, spun and woven into tissue. In Germany it is known as steinflachs (stone flax), and the miners of Quebec give it quite as expressive a name—pierre coton (cotton stone). The asbestos mines of Quebec are the most famous in the world, yielding 85 per cent. of the entire output, Italy being the only competing country, and there the industry is declining. Although Charlemagne is said to have had a tablecloth of asbestos, which he cleansed by throwing into the fire, it was practically unknown until 1850.

The Italian mineral was then experimented with, and some years later put on the market. In 1878 the first Canadian mine was opened, and the product steadily increased until 1890, when 9,860 tons, worth \$1,260,000, were mined. There has since been a decline in value, the amount for 1896 being 4,000 tons, worth only \$430,000. Asbestos is flexible, non-combustible and a non-conductor of heat and electricity, and on these properties its increasing use depends. It is spun into yarn, from which cloth is woven for drop curtains in theaters, clothing for firemen, acid workers, etc. It is made into lamp wicks and gloves for stokers, and ropes for fire escapes. It is felted into millboard, to be used as an insulator in dynamos and as a fireproof lining for floors. It is used to insulate electric wires, and as a covering to prevent loss of heat from steam pipes. Mixed with rubber, it is used to pack steam joints.

### INVENTION OF THE MARINE ENGINE.

W. Clark Russell, well-known British writer on marine subjects, in the course of a late contribution to the Pall Mall Magazine, gives the following opinion regarding the invention of the marine engine: "The invention of the marine steam engine has a vast number of claimants. One looks around the crowd bewildered. If I may, with the utmost modesty, venture an opinion, I should say that the first man to give practical and useful form to the idea of driving a wooden hull by steam machinery was Symington, who in 1801, fitted up a steamboat at the instance of Lord Dundas for the Forth & Clyde Canal Co. She towed two vessels of an aggregate burden of 140 tons, at the rate of 3¼ miles per hour, in the teeth of a strong breeze. Justice should be done to John Fitch, however, an American, who so early as 1784 had obtained rights to run steamboats on the waters of Virginia and Maryland. His partner was one Rumsey. Afterwards the states of Pennsylvania and New York granted Fitch exclusive rights in the use of their waters. His boat was of 9 tons, and his engine drove her 5 miles an hour. He failed for want of money, and died by his own hands in 1798. One who knew him says he could think of nothing but his steamboat, and he fell into rags and broken boots through wandering and talking of her. The same authority says that he met him at the house of a boat builder, a man Wilson, with whom was associated his blacksmith, Peter Brown, where, after indulging himself for some time in his never-failing topic of deep excitement, he concluded with these memorable words: 'Well, gentlemen, though I shall not live to see the time, you will, when steamboats will be preferred to all other means of conveyance, and especially for passengers; and they will be particularly useful in the navigation of the river Mississippi.' He then retired; and on which Brown, turning to Wilson, exclaimed in a tone of deep sympathy, 'Poor fellow; what a pity he is crazy!'"

### TEST OF THE EOPHONE.

An official test was recently made on a government tug with the eophone, an instrument designed for the purpose of preventing collisions at sea. This instrument has been used somewhat in the revenue service and it is now expected it will be generally introduced in the government service. The instrument is said to be of simple construction; a specially shaped vane placed on the pilot house of a vessel is connected with a dial by brass rods. During a fog, or at any time the instrument's use is necessary, the operator places receivers similar to those of a telephone to his ears and the sounds of a whistle or of breakers are transmitted to his ears through the vane and funnels to the receivers. The operator then turns the mechanism until the maximum sound is noted and the dial then registers the exact direction of the sounds, thus locating to a fraction of a point the reef or other vessel. A whistle can be heard many miles away and it is said the instrument never fails in accuracy.

### BETTER FUEL THAN COAL.

A newly-discovered mineral, which is of a lustrous black color, and which, as a fuel, surpasses coal and all other substances heretofore known, is described by the "Journal of Geology." It is found on the Island of Barbados, in the Lesser Antilles, where the natives call it "manjak."

It is thought that manjak is petrified petroleum, great quantities of petroleum being found on the same island. It contains only 2 per cent. of water and fully 27 per cent. of solid organic matter, thus surpassing in utility the best asphalt of Trinidad, in which 30 per cent. of water is contained, and which has been classed so far as the very finest fuel. Mixed with turf, it gives heat far superior to any known.



## NEWS AROUND THE LAKES.

## ESCANABA.

*Special Correspondence to The Marine Record.*

Additional ore trains are being put on as fast as necessary.

Docks at Gladstone are about ready and trains are expected in about 3 or 4 days.

Railroad and dock officials look for the largest year's business in the record of the port.

The ice at Green Bay has broken up so as steamers can run nearly to Long Tail Point.

The Goodrich steamer Iowa was at Sturgeon Bay last Friday, for the first time this season.

Repairs to ore docks are about completed and a crew are at work washing out ice and snow.

Captains and engineers of the Naw tug line of Green Bay will be the same as last season.

The vessel loaders union at Marinette and Menominee have decided upon a rate of 50 cts. per hour.

Tug Monarch is receiving a new coat of paint and is now all ready for work as soon as navigation opens.

The Parks Foster and Niagara are to be sent to this port as soon as possible to load ore for South Chicago.

First ore train of the season consisting of about 45 cars, arrived Thursday, and trains are expected every day.

The light-house tender Dahlia has commenced resetting spar and gas buoys on Lake Michigan and Green Bay.

This section was treated to two very hard rain storms last week, which started the ice to honey-combing in good shape.

There is a rumor afloat around here about the Lake Michigan Car Ferry Co. running their boats between this port and Milwaukee or Chicago.

Your Chicago correspondent has probably noticed the new ruling issued by the collector of customs at that port relative to clearances of merchandise and grain for export.

The ice along the west shore of the bay has broken up in many places, especially around the sand bars, although between here and Gladstone it is still solid enough to drive on.

Last week lightning set fire to the large lumber plant of the Bay De Noquet Lumber Co., at Nahma, resulting in a total destruction. The logs of the company will be towed to Menominee for sawing.

Have not heard whether Ann Arbor boats reached Menominee or not, but at last report they were in sight about 15 or 20 miles out. Will advise the RECORD by later mail whether they succeed or not.

It seems that the Ann Arbor was unable to reach Menominee: The steamer Wyoming, which wintered at Menominee, was expected to reach Milwaukee to-day in the event that the carferry steamer Ann Arbor No. 1 succeeded in forcing a passage through Green Bay to that port. A telegram from the captain of the steamer, received this morning, stated that the ice was still too thick for the proposed trip. This leaves the inference that the carferry failed to get through.

## AMHERSTBURG, ONT.

*Special Correspondence to the Marine Record.*

Whaleback No. 202, which wintered here, ore laden for Lorain, is waiting for a tug.

Carken, Stickney & Cram sent No. 4 clam shell dredge to Toledo, Saturday, on private work.

The schooner Selkirk discharged the first load of coal of the season here for the Cuddy-Mullen Coal Co.

The passenger steamer Imperial is doing a good freight and passenger business between Windsor, Amherstburg and Pelee Isle.

Capt. West of this place has chartered the tug D. N. Runnells of Port Huron, and will use her here in competition with the Home Rule.

The U. S. Engineer Corps have a large crew of men here testing bottom, removing boulders, etc., under the able direction of Engineer Dixon.

U. S. steamer Hayes placed Bar Point light ship No. 59, in place Saturday. Buoys are in place at mouth of river, and ranges and lights in operation.

The U. S. steamer Fanny H. is here, being used as a tender for Engineer Dixon. Capt. John Stewart and Chief Engineer Harry Shaw are in charge.

The Sullivan Dredging Co. have the dredges Tipperary and Old Glory working on the Lime-Kiln Crossing, also dynamiter and drill scow in full blast.

A sailor on the schooner Chattanooga lying here, was badly cut by a colored man with a knife on Saturday, the sailor lost his middle finger, "politics" did it.

Capt. Hackett, owner of the tug Home Rule, which has just been extensively repaired at Detroit, is now ready for any and all business coming this way. Capt. Hackett is well liked, his tug is a good one and he is sure of a fair patronage.

## DETROIT.

*Special Correspondence to The Marine Record.*

John Burns, of Port Huron, has qualified as the master of the E. C. Pope.

Capt. J. H. Coleman has been retired from the command of the steamer Penobscot and succeeded by Capt. T. Gileson.

Capt. John Robertson, of Marine City, will take command of the passenger steamer Darius Cole, plying between Detroit and Port Huron.

M. M. Sullivan's new dredge, which is being built on the Beaubien Ice Co.'s dock, foot of Campau street, will be launched on Thursday.

General Passenger Agent Schantz, of the D. & C. line, says the Sunday boat will be put on the first Sunday in May, if the weather warrants it.

Supervising Inspector Galwey has inspected Mrs. John S. Newberry's steam yacht Truant, which has just been refitted with a Roberts water tube boiler.

Included in the recommendations for the improvement of the "Soo" river, made by Light-house Inspector Kennedy, is the placing of a gas-lighted beacon at the turning point in Mud Lake.

It will probably require another month to transform the steel tow barge Aurania into a steamer at the Detroit drydock. The engines will be put in place some time within a week. The Aurania was originally constructed with a view to making the change, so the work is not difficult.

The Ashley & Dustin line steamer Wyandotte has been brought from her winter berth at Wyandotte to the foot of Third street to receive her cleaning up for the coming season. The Wyandotte will resume her daily run to Grosse Isle, Wyandotte and Amherstburg some time during May.

General Passenger Agent A. A. Schantz of the D. & C. line of steamers, is getting out an elaborate advertising book for distribution throughout Ohio, Indiana and Southern Michigan. The book will contain a novel, the scene of the story of which will be laid on one of the D. & C. steamers on the trip to Mackinac.

The question of the appointment of a master for the new passenger steamer Pennsylvania, owned by Cleveland, Sandusky and Erie capitalists, was settled by the selection of Capt. Harry Tyrie, of Toledo, formerly mate of the Metropolis. The Pennsylvania is now receiving the finishing touches at the Detroit dry dock and will be ready about May 15 to go on the Erie and Buffalo route.

The Thomson line steamers Douglas and Pilgrim announce the opening of the season Saturday. The Douglas will leave John Stevenson's dock, foot of Randolph street, for St. Clair river points, Lexington, Port Sanilac, Forester, Forestville, Sand Beach, Port Hope, Oscoda, Harrisville, Alpena and Rogers City. She will be followed on Tuesday by the Pilgrim, which leaves for Alpena and way ports.

If the board of estimates allows the item of \$72,000 asked by the fire commission with which to build a fire boat this year, the question will arise as to where the new boat shall be built. The sentiment among vesselmen is that the Detroit Dry Dock Co. should be given the contract for building the craft. There is no shipbuilding plant on the lakes which is better fitted to turn out a perfect fire tug than is the Detroit firm.

Capt. Gilbert LeCroix, J. Hubbard and Capt. John Desiros, of Mt. Clemens, and the Parker Chartering Co., of Detroit, have formed themselves into a new company for the purpose of operating the steamer A. D. Hayward, which was purchased at a marshal's sale last winter. The boat has been chartered to the Western Plaster Co. to carry plaster from Alabaster, Mich. Capt. Desiros will be her captain and Philip Thomas her engineer.

The material for the steamer to be built at the Wheeler yard for the Spaulding Lumber Co., of Chicago, is being shipped by the iron mill. Work will be started at the yard as soon as the necessary amount of material has arrived. The Wheeler yard is not the only one that has been handicapped by lack of material. Nearly all of the steel yards have more than they can do, and shipbuilding all over the lakes has been delayed by the non-arrival of material.

The dry dock work on the Aurania, which is being transformed from a tow barge into a steamer, has been completed. The boat is now alongside the Detroit Dry Dock Co.'s wharf, at the foot of Dequindre street. Her new boilers are on the wharf, only waiting the order of yard superintendent Langell before being hoisted into the vessel's hold. The engines for the Aurania are not entirely completed, but they, also, will be ready for placing by the time the boilers are in place.

COMMANDER HANFORD, U. S. N., inspector of the tenth light-house district, has recommended that gas buoys be placed on Galoo Island Shoal, Lake Ontario, on Kelley's Island Shoal, southwest of Kelley's Island, Lake Erie, and on Peach Orchard Point, entrance to Put-in-Bay, Lake Erie. It is probable that these buoys will also be in place shortly after the opening of navigation. Commander Kennedy, of Detroit, is preparing for further lighting of the Sault river with several additional gas buoys. The new channel above the locks will probably have three gas buoys in addition to range lights authorized for that place. A new gas lighted beacon will be provided for the turning point in Mud Lake. It is not expected, of course, that the new Sault river lights will be provided immediately upon the opening of navigation, but the work will be carried out as rapidly as possible.

## CLEVELAND.

*Special Correspondence to The Marine Record.*

Joseph Lampoh has qualified as master of the Onoko.

Capt. J. S. Dunham, Chicago, visited this port during the week.

Mr. W. A. Luce, the well known coal shipper of Erie, Pa., visited Cleveland this week.

A fleet of six of the Cleveland steel canal boats cleared for Erie on Wednesday. The combined cargoes amounted to 60,635 bushels.

The first vessel of the season cleared for Chicago on Wednesday, and it is understood she will try to make the trip. The boat is the W. L. Wetmore. Capt. C. M. Ennis.

The Cleveland-Ogdensburg line will be opened by the steamers Badger State and Empire State May 1. Messrs. Farassey and Marron, River street, are the general agents. Capt. Collier is manager.

Government work on the breakwater and west pier is now being actively carried on and a good season's work is anticipated. Col. Smith, Corps of Engineers, U. S. A., is in charge of the district and all local improvements.

The C. & B. line steamer City of Buffalo is being put in readiness for leaving the Cleveland Ship Building Co.'s yards at Lorain, and she will probably be here this week ready for an early start on her regular season route.

The announcement has been made that the new steel steamer Globe, the property of the Globe Iron Works Co., has been sold to the Rockefeller fleet, the deal being consummated through L. M. Bowers, Mr. Rockefeller's agent. The price is said to have been \$210,000.

The tug H. L. Chamberlin will tow the whaleback barge 105 from Lorain to Detroit to-day to be placed in dry dock. The Cleveland docks and also the docks at Lorain are engaged and vessels are waiting. The whaleback barge 202, which held a cargo of ore at Amherstburg all winter, will be brought to this port by the tug Chamberlin.

Bartlett & Tinker general freight and forwarding agents and wharfingers, have sent out the following notice: The first steamer of the Merchants' Montreal line will leave Cleveland on or about April 25. Warehouses are now open for reception of freight destined to Toronto, Kingston, Brockville, Prescott, Cornwall, Montreal and points beyond.

A large number of the boats that are managed in the offices of ore shippers will be ready to start out the latter part of the week, and as soon as the Straits are open there will be a general start. All the masters in the employ of Pickands, Mather & Co. have been notified to report April 25. The engineers have been at work for some time and the boats of that large fleet could be made ready for service on very short notice.

Capt. C. R. Cleveland, of the steamer William Chisholm, lying at the dock near the Central blast furnace, reported to the police Tuesday that sometime during the past two or three weeks someone entered his boat and stole brass work, oil cups, crank pins, etc., valued at \$30, and damaged the engine to the extent of \$200. At the same time Capt. J. M. Babbitt, of the steamer J. H. Devereux, lying at the same dock, reported tools and engine attachments valued at \$25 stolen and the engine damaged \$200.

The whaleback excursion steamer Christopher Columbus will leave Manitowoc, June 16, for Lake Superior, where excursion trips will be made out of Hancock, Marquette, Duluth, Washburn, Bayfield and Ashland. The time allotted for the series is ten days, and then the big steamer will be hurried to Chicago, in order that the first trips between Chicago and Milwaukee may be made on June 28. Messrs. Farrasey & Marron are the general agents for the line at this port and they have probably made the foregoing connection for the season.

One of the most successful launches of the year was that of the large steal steamer Henry W. Oliver last Thursday. The Oliver was built at the Lorain yards of the Cleveland Ship Building Co. The Oliver is 464 feet in length, 50 feet wide and 28 feet 6 inches molded depth. She is supplied with three Scotch type boilers 12½ feet in diameter, and triple expansion engines with cylinders 23, 38 and 63 inches in diameter. The piston has a 42-inch stroke. The vessel was christened by Miss Anna Belle Wilson, of Cleveland, daughter of Capt. Thomas Wilson, managing owner of the Wilson Transit Co.

Coal men are taking all boats offered at 30 cents, and the feeling is strong. There is very little tonnage on the market and there will not be much more chartering done until navigation at the lower end of the lake is open and vessels of the Buffalo winter fleet are able to reach Ohio ports. A number of boats that are at Buffalo have been chartered to come here and load. The steamer Manchester was placed on Wednesday for coal, Erie to Escanaba at 30 cents. Very little is being said about wild rates on ore. Vesselmen who are free are figuring on making several trips in the grain trade before they take ore and offerings of wild ore tonnage at the start will be light. Shippers, however, feel confident that the rates at the opening will not be higher than the contract rates, which are 50 cents from Escanaba and 60 cents from Lake Superior ports.

Capt. W. A. Collier, manager of the Northern Transit Co., which operates the steamers Badger State and Empire State, between Toledo, Cleveland, and Lake Ontario points, states that a new east and west package freight lake and



rail line is to be established from New York to Toledo and thence to the west and southwest. The route is from New York over the Ontario & Western to Oswego, thence to Toledo by the steamers Empire State and Badger State, and finally over various western roads, entering Toledo. There will also be a canal line run between New York and Oswego in connection with the two steamers. The Badger State and Empire State were formerly owned by the Western Transit line, but were sold by that company, in 1897, to the Detroit Dry Dock Co. They were later transferred to the Northern Transit Co., thoroughly overhauled, and last season ran between Toledo, Cleveland and Ogdensburg, carrying passengers and freight. This season they will perform the same service, stopping at Oswego on both the up and down trips.

## CHICAGO.

*Special Correspondence to The Marine Record.*

The river custom house, or barge office, has been opened for the season. This is considered by all parties as an indication of the resumption of navigation.

The steamer Juliet, which has been purchased by the Chicago Drainage Commission, is being refitted at Davidson's shipyard, and will arrive here at the opening of navigation.

The Illinois Steel Co., Chicago, has received the contract to furnish engines for the two new warships building at Cramp's for the Russian government, and the Sterling Co. will supply the boilers.

The Inter-Ocean Transportation Co. steamers Maryland and Manchester are under charter for the season to deliver ore at South Chicago from Escanaba. The Maryland wintered in Milwaukee and the Manchester at Erie.

After July next, or when the new crop year begins, the Chicago Board of Trade's estimate of the visible grain supply will take in stocks at Fort William, New Orleans and Galveston, and drop those at Albany, Oswego and Cincinnati.

The Fred Pabst, Capt. D. C. Sullivan, and the Helena, Capt. James Leisk, have cleared from Milwaukee loaded with grain for Buffalo. It is expected that a start will be made by Saturday. The Fred Pabst was the first boat through the Straits last season.

Capt. C. H. Sinclair, who has been associated with C. A. Macdonald, the Chicago marine insurance man, as inspector, wrecking master, surveyor, etc., for a period of years last past, has severed his connections with that house, and now has taken a similar position with the McCurdy-Prime syndicate.

The Wolverine Motor Company, Grand Rapids, Mich., have recently booked an order for a 43-foot launch with a full cabin, finished in cherry, to be used for cruising purposes by a party in St. Louis, Missouri. They have sold in addition, another of smaller dimensions for Hamilton, Ind. A large number of rowboats have also been ordered.

The barges Minnie E. Kelton and the Adelia Shores, of Milwaukee, are at Ludington loading lumber for this port. Samuel Neff, owner of the barges, has contracted to deliver all the remaining lumber, consisting of about 5,000,000 feet, to the Soper Lumber Company, of Chicago. The two barges will carry a combined cargo of 1,400,000 feet.

The Milwaukee life saving crew will be the same as it was last year, and the station will be in charge of Captain Garland again this season. The members of the crew are: Frank Gardis, No. 1; Henry Sinnigan, No. 2; William Peterson, No. 3; John Allie, No. 4; Julius Meyer, No. 5; Charles Johnson, No. 6; Emil O. Peterson, No. 7; Richard Wachsmuth, No. 8.

The steamer Osceola has been purchased by the Lake Superior line from a syndicate of Port Huron vesselmen managed by R. T. R. Wright. She will run between Chicago and Duluth. The Osceola takes the place of the City of Duluth, lost a year ago last winter at St. Joseph. Last year the line chartered the James Fisk, Jr. The price paid for the Osceola was \$30,000.

William E. Fitzgerald, president of the Milwaukee Dry Dock Company, has transferred a one-fourth interest in the steamer Hennepin to Frederick D. Underwood, general manager of the Baltimore & Ohio railway, for a nominal consideration. This deal will in all probability place the Hennepin in the Baltimore & Ohio package freight line between Chicago, Milwaukee and Fairport.

Six schooners have been chartered by Capt. Miles Barry to bring ice from Muskegon to Chicago, and six more will be secured this week. The boats will be towed by tugs in bunches of four each; four to be loading, four to be discharging, and four to be on the way. Capt. Barry's company has 100,000 tons of ice gathered at Spring Lake, which will be sold here in opposition to the ice trust.

The collector of customs has issued a ruling that hereafter clearances of merchandise and grain for export must be made to the ultimate destination of the goods, and not to the lake port where the vessel shall be unloaded. This is done for the purpose of gaining valuable statistics regarding the export business of the United States, and captains will be compelled to furnish this information when taking out clearance papers.

The steel steamer Illinois will be launched on Saturday afternoon at South Chicago. The Illinois is to be an addition to the Northern Michigan Transportation Co.'s fleet of steamers, and will be one of the finest boats for passenger

trade on the Great Lakes. The steamer will make two trips weekly between Chicago and Mackinac Island, with stops at all Michigan resorts. The vessel will carry 200 passengers and 1,500 tons of freight.

D. E. Lynn has resigned his position as assistant superintendent of the Dunham Towing and Wrecking Co., of Chicago, and will take charge of the American Mfg. Co.'s business on the lake. Mr. Lynn's many friends will be glad to hear that he has such a good position, and the American Mfg. Co. can be congratulated in getting the services of Mr. Lynn as he has a larger number of friends among the vessel owners, masters and engineers on the lakes.

There was some inquiry for grain carriers at Duluth this week. The steamer Chili was placed for a cargo of corn, Duluth to Buffalo, at 2¾ cents. From Duluth to Kingston 4¼ cents was offered on corn and 4½ cents on wheat. Chicago and Milwaukee shippers are bidding for boats to arrive. No effort is being made to do anything in ore freights. The steamer Globe, which was bought by the Bessemer Steamship Co., Saturday, will carry her contract ore for M. A. Hanna & Co. She was chartered early in the winter.

An attempt is to be made to release the steamer Harlem early this season. The Harlem stranded on the south side of Isle Royal, Lake Superior, last winter, and was abandoned after several wrecking expeditions had gone to her. It is said that Captain James Davidson, of Bay City, will fit out an expedition, and that he has strong hopes of effecting her release. The Harlem was owned by the Western Transit Co., Buffalo, and was built in 1888 at Wyandotte, by the Detroit Dry Dock Co. Her hull insurance valuation when she stranded was placed at \$165,000, and she also had a valuable cargo, a portion of which was secured by salvage services.

## BUFFALO.

*Special Correspondence to The Marine Record.*

W. H. Hurd, of Buffalo, has bought the schooner Lizzie A. Law from Capt. Davidson.

The steamer Queen City, which was to have left this port on Sunday, is still here, and it has not been decided when she will start out.

One of the fueling companies has made a rate of \$2.15, and will try to maintain this figure, although it is 15 cents higher than last season's price.

Geo. L. McCurdy, the Chicago underwriter, was here this week in conference with vessel and insurance interests. It is not thought that anything in particular was accomplished, but it is known that Mr. McCurdy stepped out of town very promptly and rather more hurriedly than anyone anticipated.

Formerly, boss grain scoopers who were keeping liquor stores, exercised a prevailing influence over the men engaged as shovelers. In the future the men will be paid directly by the contractor, and by the hour. This cuts out the saloon element patronage, and, incidentally is a repetition of the action taken on the Thames river, London, many years ago. It is a step in the right direction.

The coal rate is practically fixed at 30 cents," said a broker when asked his opinion this week. "There is a good amount of coal to arrive, though Cox Bros.' dock and the Erie are the only ones loading at present. I think there will be coal enough for all the boats which desire to carry it. Several of the Buffalo winter fleet are under charter for Ohio ports and others will not care to take coal at all, so I consider the report of a great scarcity somewhat unfounded."

The Western Transit Co., of Buffalo, has begun receiving freight at all points between New York and Buffalo for shipment west by lake to both Superior and Michigan. Officials of the line, however, express the opinion that none of their boats will start before May 1. The fleet will not be delayed by fitting-out work, as every one of the boats will be in condition by Saturday night. Machinery and other repairs have already been attended to and little remains but painting and general tidying up.

Charles H. Keep, Esq., Secretary of the Buffalo Merchants' Exchange, in his recently issued annual report values last year's loss of vessels on the lakes as follows: Number 64, capacity net tons 46,670, value \$1,263,200. Mr. Keep evidently thinks that lake tonnage, or that portion of it which was lost last year, as being pretty cheap old stuff, as the total loss aggregates only about \$25 per ton. Figures of course, can neither mislead nor lie, so that Mr. Keep's figures on lake tonnage valuations must be accepted.

The project for diverting the grain trade from Buffalo, the Erie canal, and the railroads, to the St. Lawrence route, via Port Colborne, Ontario, is being quietly worked just now at Ottawa, where a franchise for the company seeking to bring about this move is asked as well as improvements to the harbor at Port Colborne, and the reduction or abolition of canal tolls. It is estimated that two hundred million bushels of wheat will be diverted by this route to Port Colborne and other foreign countries within two years. Singular to say, the major portion of the capital for the scheme comes from the United States.

Vesselmen in Toronto, Port Dalhousie and St. Catharines are up in arms against a recommendation said to be made by Supt. Thompson, of the Welland canal to the Hon. A. G. Blair, Minister of Railways and Canals. It is to the effect that boat owners should be charged for wharfage during the winter months at Port Dalhousie and other points along the Welland canal. In discussing the matter to-day several owners of vessels expressed the opinion that

Supt. Thompson was overstepping his duties in recommending that they be charged eight cents per ton of the tonnage of each vessel that would occupy a berth at these points.

Owing to a reduction in grain rates from Chicago and Milwaukee by all-rail routes, a necessary reduction has been made in lake and rail rates on flour and grain products, from all western ports. The reduction which was agreed to on Saturday, and which also goes into effect to-day, amounts to three cents per hundred pounds from all ports to New York, and are as follows: St. Paul and Minneapolis, domestic, 21½; export, 20; Chicago, Milwaukee, and all Lake Michigan ports, 14 cents all around. Superior, 16½ cents, Mississippi Valley, 16½. Buffalo to New York, domestic, 10 cents. Export, 7½. The above rates are all through, from ports named to seaboard.

Last season the British and Foreign Marine Insurance Company carried all the risks on flour from western lake ports. The company's losses were extremely heavy and strangely enough were incurred almost invariably on vessels of the first class. This season an effort was made by the company to increase the rates, against which action a vigorous kick was registered by the traffic managers. The result is now apparent. The Union Marine Insurance Co., which is also a foreign corporation, stepped to the front with a lower rate, which was quickly taken advantage of by the vesselmen and the Union will have all the business. Premiums on this commodity alone will probably amount to from \$75,000 to \$100,000 yearly.

News was telegraphed from Ottawa, Ont., to the effect that application has been made in parliament there for the incorporation of the Canadian Inland Transportation Co. A fleet of ten steel steamers, measuring 276 feet in length by 43 feet beam will be constructed for the company. In fact, the keels of two of them are already laid. Their capacity will be 78,000 bushels of wheat, with a 14-foot depth in the canals, which could be increased to 108,000 bushels with 18 feet of water in the canals. It is said that \$4,000,000 will be expended at once in the construction of this fleet, and that when completed it will be able to compete with American vessels for all export trade. At present there are on the upper lakes only four Canadian bottoms capable of economically carrying wheat through a 14-foot waterway to Quebec.

## PORT HURON.

*Special Correspondence to The Marine Record.*

The schooner Dunford has been entirely rebuilt and is in first-rate order for the season's business.

The little tug Sand Beach, which has been lying in Black river during the winter, is being fitted out for harbor purposes.

Capt. W. E. Rice, custodian of the harbor of refuge at Harbor Beach (Sand Beach), will leave here this week to resume his duties at that place.

The ice in Black river as far up as the Beard mill is said to have almost disappeared. This is one of the years when no particular freshet has taken place.

The McCollom & Lee dredge which has been lying in Black river during the winter, will be fitted up and taken to Duluth as soon as the ice will permit.

The Jenks Ship Building Company will commence work in their new ship yard on the Bunce farm next week. The entire river front will be sheet piled and docks will be built.

The steamer Arundell had quite an experience with the ice on her first trip between this port and Detroit. The most ice was met at Marine City, but she got through with very little detention. It is now expected that she can keep the route open without much difficulty.

A. R. Avery, collector of customs at this port, wrote the Treasury Department asking for an additional leave of absence. In his letter to the department Mr. Avery says he is rapidly regaining his strength and in a few weeks will be able to resume his duties. His request was granted.

The steamer J. Lincoln and barges with coal for the fiber works arrived here this week. The northwest and west wind has blown the ice over to the Canada shore without paying the export duty. All hands are hustling to get their boats ready for business. If the winds shift to the northeast the river will no doubt be full of floating ice.

Last week I sent a list of the chief engineers shipped out of the port and the following are the names and boats of the assistant engineers: Fred Bonner, Thomas Davidson; G. W. Cook, Simon Langell; A. W. Carlisle, Niagara; Oliver Durant, R. R. Rhodes; P. G. Danger, Victory; James R. Enghert, Business; Harry Edmondson, D. Leuty; H. W. Fraser, Oscola; J. H. Green, Port Huron police force; John Gibson, Normandie; Albert Gibson, Elfinmere; William Griffith, Maggie Duncan; Wm. E. Hilton, Thos. R. Scott; Fred Hibbard, Pawnee; J. J. McCarthy, George T. Hope; Henry McElhinney, John B. Ketcham; Thos. McLaughlin, Argonaut; Wm. Moss, J. C. Ford; Jas. H. Nye, Frank Rockefeller; Edward Oag, Eber Ward; W. F. Oakes, Samuel Mather; W. P. Pelkey, Brazil; Henry Rodgers, Gogebic; Henry Rondeau, Rhoda Stewart; George Renew, Canisteo; George F. Robin, Geo. F. Williams; Samuel Radcliffe, Westford; A. J. Smith, Chili; W. L. Sullivan, Bangor; R. J. Smith, M. A. McGregor; Albert Turner, J. Fi-k, Jr.; Fred Welch, Oglebay; Chas. Schronrock, Alcona; Thos. Larabee, Pilgrim; Lewis Annis, Mark Hopkins; Fred Warner, Peter Chamberlain; John Warner, Osceola; Herman Schmidt, Germanic; James Crockett, Sanilac.



# PORTABLE PNEUMATIC RIVETERS IN SHIP-BUILDING.\*

Probably the hardest manual labor in all the various operations in building a ship is that of riveting. Combined with this is an amount of technical skill acquired only by long and arduous apprenticeship at the trade, and varying with the class of rivets driven. Like the stonecutter who can only learn to do first-class work on one particular stone, and is at a loss, for instance, on marble, if trained to granite, so a first-class shell riveter cannot properly drive inside rivets, and *vice versa*, while the boiler riveter, however good he may be at his own work, is of little use on any part of the ship's hull. With such conditions, a difficult trade to learn, a hard and exhausting one to follow, wearing a man out in his youth, for no one ever saw an old riveter—although in other trades age itself is not necessarily a bar—wages are inevitably high, and most of the work is done by the piece. When the work is to be had, therefore, the riveter makes a great deal of money, but at the expense of his vital energies, which he is too apt to attempt to restore by stimulants, especially as his work is done almost entirely, from the nature of the case, in the open air, exposed to the heat of summer and the cold of winter. The tools with which he works are furnished entirely by the yard, so that, unlike other mechanics, he is not obliged to have anything of his own, while, as rivets are rivets the world over, little familiarity with the customs of any particular yard is required of him, and he has not much incentive to remain in one place to establish relations of amity and mutual esteem with his superiors. The riveters, therefore, have been extremely independent, arrogant, and high-handed in their relations with the masters, giving more trouble than all the other classes of labor in a yard put together. In addition to this the rapidly-increasing size of ships, with the corresponding necessity for heavier plating, doublings, etc., requires the use of larger and longer rivets, which cannot be properly closed down by hand, however skillful the men may be. For all these reasons, in the yard of the Chicago Ship Building Company, of which I am the manager, some three years ago a determined effort was begun and an extended series of experiments entered upon to develop machinery capable of being operated by unskilled labor, by which all the rivets in a ship could be driven, which effort has been entirely successful, so that in the last ship we have completed there were a little over 250,000 rivets so driven out of a total of 340,000. But for insufficient air supply the proportion would have been greater. The decision to use compressed air for the operation of the machines, instead of hydraulic, or electrical power was made for several reasons. The severe winter climate of Chicago is against the use of hydraulic machinery in the open air, besides which we were aware that hydraulic compression riveters had never made much headway in British yards, though long in the market, and it seemed wiser to try a new line. Electricity, though advancing by leaps and bounds, is an intricate science in itself, with which we were not familiar enough to see much promise in it, and all electrical appliances are very costly and somewhat delicate, apparently unsuited to the rough handling inseparable from ship work. More important, however, was the fact that air can be used for chipping and caulking hammers, for drills and reamers, and for hoists, as well as for ventilating and cooling confined places, so that a compressing plant is a necessity in any event, while we, of course, knew that pneumatic compression riveters are universally used and indispensable in American bridge shops. We had in use already at that time a stationary steam riveter of the ordinary type driving rivets in such portions of the ship as could be assembled and handled as a whole. 1800 rivets is an ordinary day's work of ten hours on this machine at a cost of one half cent apiece. A very short experience with compression riveters shows that their great weight—reaching over 2,500 lbs. for 6 feet gap—interfered too much with facility of handling to make them either useful or economical.

We then turned our attention to the pneumatic hammer, consisting of a cylinder in which a piston reciprocates, delivering an almost continuous series of blows against the end of the chisel, caulking tool, or rivet die. The hammer is light, powerful, short enough to go between frames, and small enough in diameter to get at rivets in corner angles. For small rivets it can be held in the hand, though the work is severe. It is, however, almost impossible to hold on to the rivet by hand, the heavy holding-on hammer being fairly

jarred off the head of the rivet by the rapidity of the blows from the pneumatic hammer, giving the hold-on no opportunity to bring his tool back into position between blows as in hand riveting. We quickly devised a simple pneumatic holder-on, however, which admirably serves the purpose, consisting only of a cylinder carrying a piston, behind which air is admitted, the rod extending through the front head and being cupped out to go over the head of the rivet. A piece of pipe secured to the cylinder braces it against any convenient support. Combining these two machines with a yoke, the hammer being mounted on one arm and the holder-on on the other, makes a self-contained machine in which the yoke itself can be made very light, as it has to resist only the pressure of the air against the end of the holder-on cylinder and the reaction of the hammer blows. Various sizes of these yoke riveters are used, and the weights are as follows for the depths of gap given, the yoke being made of pipe for the larger sizes: 9 in., 83 lbs.; 51½ in., 160 lbs.; 70 in., 220 lbs. It is very evident, therefore, that these riveters are portable in the highest degree. In fact, in the greater number of places they are moved about by two men entirely by hand, the cross bar in the throat of those of larger gap forming a slide, and assisting in the movement. Occasionally they are suspended on a trolley from a light framework of pipe. A variation of the device is to mount the hammer in a cylinder as a piston, behind which air is admitted to force the hammer forward as the rivet point is beaten down, the die on the opposite arm of the yoke being then solid, and may be small to get into contracted spaces. For driving the rivets connecting frames and brackets at the tank top of a double-bottom ship the yoke is mounted on a pair of rough wooden wheels for ease in handling. There remain three classes of rivets in a ship, as follows: (1) Those through decks and tank tops, mostly countersunk, and all driven vertically downward from above. (2) Bulkhead rivets (other than those near the top, or adjoining openings, which can be reached by a yoke), nearly all with full heads. (3) Those in the outside shell of the ship all countersunk. These three classes must be reached by riveters on one side and holders-on on the other, without any connection whatever between them. The first-class are most easily driven, and for them the hammer is mounted on a bent pipe, with a pair of wheels at the bend. The operator raises the handle to bring the flat die on to the rivet, and, the bend of the pipe being loaded with lead, has only to bear down upon it in driving. A second man, with a pneumatic clipping hammer, cuts off the surplus metal, and, the riveting hammer being brought back, a few seconds complete the operation. In this case the pneumatic holder-on is operated from below by a third man being braced against the bottom of the ship or the next deck below. For corner work a somewhat different arrangement is used. For the second class, the hammer is fastened to the end of a wooden beam which slides freely on a supporting stud bolted to the bulkhead, an adjustable rod at the other end governing the distance of the hammer from the rivet point. A large number of rivets can be reached without shifting the stud. It is necessary, of course, to use the form of hammer described above with the air pressure behind it, and, as the die is cupped out to form the snap point, there is no tendency to slip off the point. The holder-on is mounted in the same way on the other side of the bulkhead.

We now come to the third class, or shell rivets, which in many respects are the most important rivets in the ship, requiring the most careful workmanship and the best finish. It is evident, at the start, that the varying thickness of plates, frame flanges and liners, and especially the depth of countersink, render it impracticable to so gauge the length of rivet used that there will always be just enough metal to properly fill the countersink and finish the point, and that, therefore, as in hand riveting, a longer rivet must be used, and after the point is beaten down with the surplus metal crowded off to one side, this surface must be chipped off, and then the point finished up, rounded slightly, and any seams between the rivet and the plate driven together and closed. To do this a certain amount of freedom of motion must be allowed in the hammer, so that its axis may be inclined at a slight angle in any direction with the axis of the rivet itself. This result is attained by mounting the hammer in gimbals on the end of a bar, instead of being immovably fastened to it, as in the bulkhead riveter. For bottom rivets this bar is attached, by a central bolt on which it revolves, to a trolley running inside a slotted piece of pipe, which is either bolted to the bottom of the ship or held up against it by a single pneumatic jack at each end. The bar

carries at its other end an adjustable brace as in the bulkhead riveter, and there is, of course, an air cylinder behind the hammer to force it in as the point of the rivet is beaten down. At one setting many rivets can be reached, and the whole arrangement is very satisfactory, a pneumatic holder-on being used inside, and an ordinary pneumatic hammer being used to cut off the surplus metal before final finishing. It is evident that the freedom of movement of the hammer can be secured in other ways, such as a ball and socket joint of large radius, but we have found the gimbal mounting more satisfactory, and all that can be desired. While the same arrangement can be used for the side of the ship, it is not very satisfactory there, and a different one is desirable. In this the bar carrying the hammer is vertical, and is fastened to a bored-out tee, sliding freely on a horizontal pipe. This pipe is prevented from moving away from the ship by vertical pieces of bar or angle iron at each end, bolted to the ship parallel to the side and eight or ten inches away from it. The pipe is hung from pulleys above, and counterweighted so that it moves freely up or down. By the vertical movement of this pipe and the horizontal movement of the sliding tee any rivet can be reached from the gunwale of the lower turn of the bilge, and for a length of about 10 feet, without shifting the rig. Inside the ship a couple of rough wood stanchions are bolted or wedged in position for guides, and a counterweighted piece of 2-inch plank moves against them in unison with the riveter and forms the brace for the pneumatic holder-on, which is easily moved by hand into proper position.

The quality of the work done by all these machines, both inside and shell, is first-class in every respect, and far superior to hand work, and such is the unanimous opinion of the inspectors who have been and are on duty in our yard. That this is natural appears from several considerations. The rivets are closed down more rapidly and at a much higher temperature, and, as it is always easy to bring the axis of the hammer in line with the axis of the rivet, and, in fact, natural for the men to so bring it, the rivet is plugged at once by the first blows of the hammer, thoroughly filling the hole throughout, before the point begins to form. The tendency of hand riveters to save labor by forming the point without thorough plugging, leaving a rivet which, though looking all right and passing the tester, is liable to loosen afterward in service from the constant jar and vibration of the hull, is, therefore, avoided. In many confined places, also, where only one man can strike, and the space for the swing of the hammer is limited to the frame spacing or less, hand rivets are very apt to be poorly driven, but it is evident that such considerations do not effect the machine, and that if the pneumatic hammer can get to the rivet at all, it is as well put in as in the most open parts of the work.

As to the cost of work, I submit the following figures, from the last ship completed in our yard:

Inside Rivets. All ¾ in.			
Hand, piece work...	25,073	Average cost....	3.16 cents.
Hand, day work....	9,255	" " " "....	8.57 "
Air.....	151,167	" " " "....	2.06 "
Steam.....	23,544	" " " "....	0.51 "
Shell Rivets.—¾ in. and 1 in.			
Hand, piece work...	51,306	Average cost....	3.99 cents.
Hand, day work....	4,314	" " " "....	7.69 "
Air.....	74,493	" " " "....	2.96 "

The amount that should be added to the machine cost to cover interest, maintenance of plant, and operation of compressor, is undoubtedly much greater than the corresponding amount for hand riveting, which is little beyond hammer heads and handles; but I cannot give it exactly, as we were using much air at the same time for drilling, reaming, and caulking, as well as for blowing rivet-heating forges—so much so, in fact, that we exceeded the capacity of the two compressors in use, and not only had to stop putting on more machines and to go back to hand riveting, but, for a large portion of the time could not maintain more than 70 lbs. pressure in the air mains, which seriously impaired the efficiency of the hammers. We had an air capacity of about 850 cubic feet of free air per minute at 100 lbs. pressure, but we have now nearly completed a new compressor of 3,000 feet capacity, to work at 125 lbs. pressure, and anticipate much better results hereafter. It is only fair to call attention to the fact that most lake freight vessels, like the one referred to above, are of very full model, with a large number of frames exactly alike amidships, and that they are launched broadside on, and therefore stand level on the stock, both of which conditions are favorable to the use of these machines, especially of the shell riveters. Against this, however, it is equally proper to state that much of the

\*Paper read at a meeting of the Institution of Naval Architects, on 24th March, by Mr. W. J. Babcock.



development of the inside riveters took place on the boat referred to above, and that the shell riveters had never been tried at all until they commenced on her bottom plating. In the latter case, therefore, all the experimenting and working out of the appliances for rapidly and economically handling the machines, as well as breaking in the men to use them, came on that boat and the cost appears in the above statement. It must be remembered, also, that the men who have worked all these machines are not riveters, nor even mechanics, but only laborers, and were not on piece work. The largest rivets we have as yet driven with these machines are 1 inch in diameter. But there is no reason whatever why larger sizes cannot be driven with equally satisfactory results. It is only necessary to use a larger hammer, one of greater diameter and longer stroke. In gasometer work in America this has been done already with gap riveters and one and one-quarter inch rivets closed with perfect success, and there can be no question but that a larger size shell riveter will handle rivets of equal diameter with the same facility, the somewhat greater weight of the machine being no disadvantage, as it is counterbalanced and does not come upon the operator at all. In Chicago we are still experimenting with and developing these tools, and hope to much further increase their efficiency and economy. I have thought, however, that the members of the Institution might be glad to know of the results already accomplished in a matter of such importance to shipbuilding.

The paper was illustrated by a number of photographs showing the riveters at work.

LIGHT BALLASTED STEAMERS.

The loneliness of a traveler lost in a desert; the loneliness of even cast-aways on an iceberg on a sailless sea, cannot be compared with that felt on a westward-bound tramp after a fortnight's slogging among waves. Day and night the vessel, high out of water, through insufficient ballast, rolls through an arc of about 90 deg. in from four to five seconds. She pitches so viciously as to cause the masts, rigging, and funnel with its guys to quiver as if about to part. She falls helplessly into the wave-hollow where her every joint is strained, and then is hurled to the crest again as though too contemptible a thing to brave an ocean. Thus she crawls westward at three knots an hour. Men, officers, and captain after a week of this exhausting and monotonous toil are barely able to speak to each other. Here the utter loneliness is felt. Provisions, even when cooked, are often unfit to be eaten, and even the daily glass of grog becomes contaminated by the searching spume which flies over the weather bow and the vessel's waist. And the way the tramp drifts; and the terrific rattle of the rudder in its trunk; the appalling stresses on the rudder chains not provided with cushions or springs to ease the shocks; the gyrations of the compass-card, which being cheap and faultily pivoted sways first to the right and then to the left, in a manner that makes steering by compass a physical impossibility; the hopeless inaccuracy of the soundings; are these not imprinted on the brain of every master commanding one of these western going craft?

It may, of course, be said—"Yes, a light ship westward bound may be uncomfortable to those on deck, but below all is well; all safe and snug and tidy." Is it? Ask the chief engineer. Safe? Why, the mad thing is rolling so violently as to uncover the injection orifice, and to wash up the bilge boards and prevent the men firing. The boiler may be safe or not so far as the water is concerned. There's water in it, that's obvious, but its level? The Lord only knows! Observe at the next heavy pitch how the engines race—there! Is that not enough to start the holding-down bolts and loosen rivets? This racing will sooner or later bring the ship to grief. A broken tail-end, or tunnel-shaft, in a gale like this, will mean certain death to us all. What a shock that was as the propeller entered and struck the water. I swear the thrust-block has started." And started it had, and Steams, the chief, had no end of trouble on the voyage in question because of the thrust bearing, and the worn tail-end shaft, and the loose propeller, conditions mainly to be ascribed, so he maintains, to the dangerous practice of under ballasting. On this point he and the master agree, but they refrain from expressing their views; for, truth to tell, for every officer of a tramp steamer who may be discharged, a dozen will step forward to take his place.—Ex.

A project is under way to build a huge dry dock at Baltimore, and it is said that one-fourth of the necessary £50,000 has already been subscribed by interests that are not identified with the Columbian Iron Works.

OPENING ST. MARY'S FALLS CANAL.

Following is a table of dates of the opening and closing of the American canal at Sault Ste. Marie, Mich., for the past ten seasons of navigation:

YEAR.	Opened.	Closed.
1889.....	April 15	Dec. 4
1890.....	" 20	" 3
1891.....	" 27	" 7
1892.....	" 18	" 6
1893.....	May 1	" 5
1894.....	April 17	" 6
1895.....	" 25	" 11
1896.....	" 21	" 8
1897.....	" 21	" 14
1898.....	" 11	" 14

The past ten seasons of navigation at the head of the Great Lakes (port of Duluth) have lasted as follows:

From April 11, 1889, to January 12, 1890; from April 2, 1890, to February 2, 1891; from April 30, 1891, to February 13, 1892; from April 20, 1892, to December 26, 1892; from May 9, 1893, to December 10, 1893; from April 16, 1894, to December 26, 1894; from April 11, 1895, to February 1, 1896; from April 12, 1896, to December 18, 1896; from April 17, 1897, to December 15, 1897; from March 19, 1898, to December 23, 1898.

SUCCESS OF A BOOK.

A bookseller has been telling literature that the color of the binding has a great deal to do with the success of a book. Red books sell. That may be a fact, but the writer is of the opinion that the class of a book's contents has all to do with it. Success for example, "Beeson's Marine Directory," of the Northwestern Lakes, is bound in the brightest red cover, embossed in gold, and it has met with an annually increased sale since its first appearance in 1888, but the red paint on the cover don't do it. Its contents are valuable as a reference work for those in connection with lake shipping and it is ever offering new features, one this year being a list of all the steam and sail lumber carriers with the capacity of each, and, again, it has been very widely advertised by parties making efforts to supplant it in public favor. How abortive these attempts have been is best indicated by the ever increasing popularity of Beeson's, the only purely marine directory of the Great Lakes.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo.....	531,000	.....	.....	4,000	223,000
Chicago.....	4,859,000	11,969,000	1,395,000	384,000	797,000
Detroit.....	354,000	371,000	4,000	4,000	7,000
Duluth and Superior	10,707,000	5,571,000	2,080,000	308,000	486,000
Milwaukee.....	32,000	1,000	4,000	5,000	81,000
Montreal.....	28,000	18,000	544,000	3,000	7,000
Oswego.....	.....	.....	.....	.....	.....
Toledo.....	321,000	431,000	131,000	2,000	.....
Toronto.....	52,000	.....	16,000	.....	15,000
Grand Total.....	30,502,000	29,708,000	11,050,000	1,369,000	1,885,000
Corresponding Date, 1898.....	29,154,000	34,917,000	12,746,000	3,076,000	1,095,000
Increase.....	71,000	.....	.....	.....	.....
Decrease.....	.....	2,153,000	233,000	80,000	150,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

Navigable Waters—Riparian Rights.—A decision of the Supreme Court adjudged that a riparian owner on Lake Michigan had the right to maintain piers extending into the lake "to the point of practical navigability," and the mandate directed the trial court to determine whether piers previously built extended beyond such points, "having reference to the manner in which commerce in vessels is conducted on the lake." Held, that the judgment of the Supreme Court must be construed to mean that the property owner had the right at all times to maintain piers to such point as was necessary at that time to render them practically useful by reaching water of sufficient depth to float the vessels then in common use in conducting the commerce of the lake, the line of practical navigability being a shifting line; hence the inquiry of the court under the mandate should be as to the time the inquiry was made, and not as to its position at the time of the commencement of the suit. People of State of Illinois ex rel. Hunt, Atty. Gen. vs. Illinois Cent. R. Co. et al., 91 Fed. Rep. 955.

INSTITUTION OF CIVIL ENGINEERS.

At the last meeting of the British Institution of Civil Engineers, Mr. W. H. Preece, C. B., F. R. S., the president, in the chair, papers relating to recent advances in marine engineering were read.

The first paper, on "Water-tube Boilers for Marine Engines," by Mr. J. T. Milton, consisted mainly of a description of the various types of water-tube boilers most in use for marine purposes in this country. For all recent vessels of the Royal Navy water-tube boilers of different type had been adopted, while very few had been fitted in merchant steamers.

The difference in practice in the two cases was accounted for by the different conditions of services required. In most vessels of the merchant service economy of coal consumption, durability of boiler, and facility of cleaning and inspection, were of far more importance than considerations of weight and space in proportion to power exerted; while in some war vessels the importance of obtaining very large powers on small weights outweighed the question of coal economy and durability.

The question of economy in boilers was largely dependent upon the completeness or otherwise of the combustion of fuel in the furnaces. The conditions required for perfect combustion had long been well known, but they were difficult of realization in actual working practice. So far as the merchant service was concerned, the general introduction of a new type of boiler would depend upon its economy obtainable under ordinary conditions of work, not upon the results of special trials. In some boilers the conditions for perfect combustion would be approximately met by very careful stoking, but were unattainable under ordinary working conditions at sea with ordinary firemen. In such boilers, while excellent results might be obtained upon special trials, conducted under the direction of skilled engineers and with expert firemen, inferior performances were obtained at sea in every-day service.

Reference was made to the question of circulation of water in water-tube boiler and experiments made upon this subject by Mr. A. F. Yarrow, Mr. J. I. Thornycroft, and the late Mr. A. Blechynden, were quoted. The experiments of the last-named were made upon a full-sized boiler. The boilers first described and illustrated were those made with comparatively large tubes. They comprised the types known as the Belleville, which was so extensively used in the large vessels of the Royal Navy; the Lagrafel d'Allest, used in the French navy and merchant marine; the Niclausse, and the Babcock-Wilcox, the latter being the type most frequently adopted in the few cases in which water tube boilers had been used in British merchant vessels. Amongst small tube or "express" boilers used in light vessels, such as destroyers and small cruisers, the Normand, Yarrow, Thornycroft, Reed, and Blechynden boilers were described. Descriptions were also given of the Fleming and Ferguson, Mumford and Haythorn boilers.

With water-tube boilers, owing to the small quantity of water contained in them, and the high rate of evaporation obtainable, automatic feeding was essential. Some types of apparatus provided for this were described.

For prolonged work, as compared with short trials, the author considered that straight tubes were very desirable, as much greater confidence could be felt in a boiler where all the tubes could be seen through than in one where much had to be taken on trust, and good results could not be expected to be obtained from mechanism in which implicit confidence was not reposed.

"THE Story of the Captains" in the May Century will mark the climax of that magazine's Spanish war series, giving, as it does, an account of every American commanding officer but one of the part played by his ship in the famous fight off Santiago, that resulted in the annihilation of Cervera's fleet. Capt. Evans describes the doings of the Iowa, Capt. Taylor of the Indiana, Capt. (now Rear-Admiral) Philip of the Texas, Capt. Cook of the Brooklyn, Capt. Chadwick of the New York, and Lieut. Comdr. Wainwright of the Gloucester, while Capt. Clark, of the Oregon, endorses Lieut. Eberle's story of the Oregon, and contributes a criticism of the Spanish admiral's strategy. The text of this novel group of first-hand accounts of one of the most remarkable naval battles ever fought is profusely illustrated with portraits, drawings and photographs, the latter from snapshots made from each one of the ships during the progress of the fight.





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## ENGINEERING WORKS IN EUROPE AND AMERICA.

There is a marked difference between the appearance of the men emerging from an American engineering establishment and that of those leaving the average European shop. In this respect the continental worker is in advance of the English mechanic. In many continental factories I have seen good washing appliances, which are always used by the men before leaving. In almost every respect the European proprietor pays far less attention to the surroundings and comforts of his work people than does the American manufacturer. It is rather the exception to see a thoroughly heated, lighted and ventilated European machine shop. Fine mechanical production requires the best of surroundings and the greatest comfort for the worker.

Particularly is this true in working metals, as it is impossible to work in badly-lighted, poorly-ventilated shops, with benumbed fingers and cold feet, and turn out a really first-class product.—H. F. L. Orcutt, in The Engineering Magazine for March.

## THE LIGHTHOUSE KEEPER.

Between lighthouse and lighthouse there is a vast difference. Some are snugly ensconced on the land, and the keeper can open his door and walk out into his garden or orchard. Others, again, are on piers or near docks, so that the keepers can hardly be regarded as cut off from the company of their fellowmen. . . . There are outlying reefs and islets which must be legibly labelled with the kindly light signal, and it is on these advanced stations where the horrors of a lighthouse keeper's lot are most developed. . . . To take a boat trip to an isolated lighthouse when the seas are calm and the summer sun shines warmly is one of the most delightful experiences. The landsman visitor is then imbued with the idea that, of all men's, the lot of the lighthouse-keeper is the most pleasant. He is housed and fed; is not overworked; has not over much responsibility; while the view from his windows is such as the king in his palace cannot attain. This is one side of the shield certainly. But even this would tire after the novelty had worn off. As Lord Bacon has pointed out, persons have shuffled off this mortal coil through sheer weariness of performing day after day the same trivial, but necessary duties. Now, the work of a lighthouse-keeper is not hard in the sense of being laborious, but it is none the less a great strain on the physical and mental powers, because from it there is little or no recreation or relaxation, save what sleep may bring. There are lamps to be trimmed and fed, reflectors or mirrors to be kept clean and well polished; while the fog-signaling apparatus must also be attended to, if the light station is so equipped. Then there is the log and weather report, etc., to be written up, and over and above all these duties, it must be remembered that the lighthouse-keepers are their

own cooks, house, and laundry-maids, so that over and above professional work, domestic duties have also to be performed. But the operations of the lighthouse and its *menage* do not absorb the whole of the keeper's energies, either physically or mentally, and, unless a man has a hobby, he is, when not working, eating or sleeping—moping and thus becoming demoralized. To many lighthouse men the solace and companionship of books is a dead letter. "Watching in a lighthouse does not require much scholarship, and many of us are just scholars enough to read our newspaper," was the remark of an old keeper who had spent the best years of his life in the service. Deadly dull, therefore, expressive phrase though it is—fails to do justice to the un-manning effects of a two-months' spell of isolated lighthouse duty on the average man. And, if this is the case during normal conditions of weather, imagine the fearful nature of the extra strain induced by a protracted duration of fog. There is not much to be seen in the way of variety from a lighthouse lantern chamber at any time, but, when fog shuts down and blots out the seascape, even preventing the inhabitants of these exposed eyries from seeing the surface of the ocean, when all is obscured save palpable, yet impalpable mist, the sense of utter isolation must be overpowering in the extreme.

## MIRAGE ON LAKE SUPERIOR.

An interesting and possibly instructive characteristic regarding the physical geography of the lakes and more particularly relating to weather conditions, or the study of hydrography, is the mirage which so often forms when the extraordinary refraction caused by certain states or stages of the atmosphere undergoes when strata of air of different densities extend above each other.

Mirage is popularly known as "the loom" among seamen, or rather that is the next and nearest thing to it. Mirage usually reflects objects at a great height besides doubling or inverting the image.

There are various parts of the world where the mirage is most marked and characteristic of the localities, such as for instance, the straits of Messina, African deserts, and other places, including the lakes.

Refraction which, as we have said, is the principal or visible cause of mirages, may be tersely explained as a quantity by which a body appears above its true place in the heavens, actually an inflection of the rays of light, or a property in the atmosphere which bends the rays of light in their passage to the eye, especially when near the horizon. There may, or may not be, some significance regarding these mirages on the lakes at various seasons of the year, and as we now have branch Hydrographic offices as well as a multiplicity of Weather Bureau stations at all available points, the marine community should look to these possible experts for a thorough understanding and explanation of the causes which lead up and bring about the natural phenomena.

Let us quote a report from Lake Superior as follows: "A most remarkable mirage over the south shore of the lake was to be seen yesterday afternoon between 2 and 3 o'clock. The whole of the coast line appeared elevated to a height of 100 feet in the air, and every tree seemed to stand out distinctly. The light-house at the Superior entry appeared to the observer to be a gigantic structure, and Park Point was plainly discernible from the city hall. Toward midnight a few heavy drops of rain fell, the shower being followed by a brilliant display of sheet lightning. These, the old timers say, are a sure presage of coming spring weather. It is said that the old Lake Superior men firmly believe that no open water will be seen until there has been a thunderstorm in the spring. The concurrence of a mirage on the lake is also considered to be a precursor of heavy weather, generally in the shape of a nor'easter."

It will now be in order for our hydrographic and weather bureau scientists to explain the apparently physical phenomena.

OUR thanks are due the Buffalo Merchants' exchange for a copy of its annual report including statistics of the trade and commerce of Buffalo for 1898, as compiled by Charles H. Keep, secretary. The report seems to contain less data than was published for many years by the late secretary, Mr. Thurston (deceased), nor does the contents furnish the excellent statistical value of former issues, besides, it appears to be somewhat discriminatory in its tabulation contents.

THE Tonawanda Iron and Steel Co. is negotiating for two additional vessels, said to be a steamer and towbarge.

## SHIPBUILDING AT THE COAST YARDS.

The Enoch Moore & Sons Co., Wilmington, Del., has received a contract to build a steam barge for Capt. R. W. Lute, of Hainesport, N. J., for service in New York harbor. The general hull dimensions are to be 125 feet long, 24 feet beam and 8½ feet deep, and to be finished by the first of July.

The keel for the steamship which will be constructed at the shipyards of the Harlan & Hollingsworth Co., Wilmington, Del., for the Winsor line, has been placed in position. The stem for the steamship Ponce, building for the Puerto Rico Steamship Co., is being bent and will be placed in position in a few days. The new angle iron furnace, 69 feet in length, and the new plate iron furnace recently constructed are about ready for operation. The plate furnace is 21 feet in length by 7 feet in width. Both furnaces are situated west of the big crane and will be placed in operation next week.

Thomas C. Munn, lifeboat builder, Wilmington, Del., has many contracts for lifeboats. About 10 boats are now lying in the yard awaiting the completion of others under way to finish an order and fill two cars. Among the contracts are eight metallic 24-foot boats for New York steamers; 12 metallic boats 22 feet in length for the Great Lakes; two boats of cedar for the United States government, each copper fastened; one whaleboat 27 feet in length to be equipped with center board and sail; a rowboat 16 feet in length; 20 metallic boats running from 12 to 18 feet in length for different steamship lines. One metallic boat was shipped to Philadelphia last week. Work will be started in a few days on three handsome mahogany boats for a New York yacht club. The boats are to be constructed of the best material and no expense is to be spared in making them the finest that can be produced. The boats will consist of a gig 26 feet in length, a cutter 18 feet in length and a dinghy 15 feet long.

We do not know whether that new shipyard will come to Chester, but it seems the old one is doing pretty well. One day last week Senator Sproul came home with a contract for a \$200,000 ship in his pocket, and the next day his father-in-law, John B. Roach, closed a contract for the two largest ships that have ever been constructed in the yard.—West Chester Republican.

Capt. George McClain, of Rockport, Mass., recently completed the design for a new schooner yacht for Major Luther S. Bent, of Philadelphia, a summer resident of Annisquam. The yacht will doubtless be a speedy and beautiful craft, the designer having given special attention to these points. The new craft will be 52 feet over all, 14 feet 9 inches beam, 7 feet depth of hold and 6½ feet draught. She will be a pretty and valuable addition to the pleasure fleet of Cape Ann. Capt. McClain has also finished a model of a 40-ton fishing schooner to be built by John Bishop for Capt. Manual D. Grace. The dimensions are 76 feet over all, 20 feet beam and 7½ feet depth of hold.

A. R. Merrill, of the Merrill-Stevens Engineering Co., Jacksonville, Fla., has just returned from Tampa, where he closed a contract with the Plant Steamship Co. to build a new steamer for the Tampa Bay and Manatee river trade. The vessel will have a steel hull, 120 feet long, 21 feet beam, 3½ feet draught, and will be of the side-wheel pattern, and with inclined engine. Work will be begun on her in the yards in this city at once, and completed in five months. The cost of the steamer will be about \$30,000.

The new ferryboat now under construction at the yard of William McKie in East Boston to the order of the Boston, Revere, Beach & Lynn Railroad, will bear the classic name of Darmouth on her paddle boxes. She is nearing completion, and it is expected that she will be in commission some time in May. She is practically of the same dimensions as the other boats of the line, the only difference being an additional length of six feet and a somewhat broader beam. It is the intention of the company to retain the Swampscott and the City of Lynn in its service, keeping one of the three in reserve during the summer months.

The two new ships for the American Hawaiian line, to be built at Roach's shipyard, will each have but one smoke stack and two pole masts. They will likely be known as the Cape Horn, and the Magellan. The new steamer for the N. Y. P. & N. R. R., to replace the Cape Charles, will have two smokestacks. She will be known as the Pennsylvania. The Jefferson, of the old Dominion line was launched at Roach's shipyard on Saturday last.

The New York Board of Docks and Ferries has just awarded to the Gas Engine & Power Co., of Morris Heights, the contract for building the department's new boat. The boat is to cost \$59,500. She will be 110 feet long, 21 feet beam, and 12 feet deep. She will be a sister boat of the Pier.



## SUMMARY OF ICE CONDITIONS.

The reports from the several stations on the Great Lakes relative to the condition of ice indicate that it is beginning to break up in Lake Superior and moving large fields with the wind. The ice moved eastward from Duluth during the week, but has come back this morning under the influence of northeast winds. About the Apostle Islands, the ice is honey-combing, and has moved to the eastward of the islands; in the bay it is breaking up. Large fields are reported along Keweenaw Point, moving eastward, while from Marquette eastward the ice is softening, but has not changed materially since last report. The ice in the St. Mary's river is softening up and getting thin where the current is strong, and clear water is reported at Detour. The ice is from 15 to 22 inches thick in Mud Lake and much thinner in Hay Lake. In Green Bay the ice is still firm in the northern end, but is beginning to honey-comb. Over the southern portion of Lake Michigan the ice has practically disappeared and offers no obstruction to navigation. The ice moved out of Muskegon Lake and at Manistee and Frankfort during the week. From Charlevoix north to the Straits the ice is not softening up very much but has broken from the shore near Charlevoix. At the Straits the warm weather has softened the ice, but as it is badly windrowed and very heavy, it will take several days of warm weather and no freezing at night to open up the ice so that it will move out. At Cheboygan the situation has not changed during the week. In Lake Huron the ice has moved off the west shore except a narrow belt along the shore, and this ice has softened considerably. The ice jam in the south portion moved northward Saturday night leaving clear water. In Lake Erie the ice appears to be confined to the east end, from Buffalo westward to Erie. There is no ice in Lake Ontario except at the extreme east end where it is still solid.

Ten days of warm weather with brisk winds will cause the ice to disappear, so that it will offer no serious obstruction to navigation.

## LAKE SUPERIOR.

Duluth, April 16.—The ice field outside of Minnesota point has been moving eastward since Friday under influence of brisk westerly winds. Telegram received this morning states that the northeast winds have returned outside ice; the field is badly broken up into floes; Duluth harbor free of ice.

Bayfield, April 15th.—The warm weather of the early part of the week has melted the ice considerably, and the heavy winds of the past two days have broken it up; clear water beyond the islands. Indications that navigation will open a week earlier than anticipated.

Marquette, April 15.—Ice still solid in the harbor and bay; during the week the ice broke away from the bay ice and was carried about six miles into the lake where it continues to move slowly eastward. Warm weather will soften it rapidly.

Whitefish Point, April 16.—Ice in bay has not moved, but is softening under warm weather and rain of past week; crossing on ice discontinued.

Sault Ste. Marie, April 17.—Ice in river opposite city cutting out rapidly. Capt. Leo. Bernard made careful examination of ice from Detour to lower end of Hay Lake Saturday, finding about 22 inches of blue ice at Lime Island and 15 inches at lower end of Mud Lake. In Hay Lake ice is getting very thin, it being possible to push a stick through in many places. At Detour clear water extends up to Pickands and Mather's dock.

## LAKE MICHIGAN.

Escanaba, April 18.—Ice is 18 inches thick, honeycombed and saturated; weak spots open; would probably break up by last of week, by big boats or under high southeast winds.

Sturgeon Bay, April 15.—Upper portion of bay, for a distance of four miles, clear of ice. Ice in Green Bay still solid except where water is shoal and around the various islands where it is disappearing rapidly; probably a passage can be forced between the 22nd and 25th.

Charlevoix, April 13.—Ice moved out two miles with fringe of solid ice along shore. It will need ten days of favorable weather to clear the ice out.

Mackinaw City, April 18.—Freezing weather has been keeping the ice in about the same condition as when last reported, but to-day being warm open water is appearing in several places. If present favorable weather continues navigation will open about April 25.

## LAKE HURON.

Cheboygan, April 17.—The ice continues about the same

as last report, the cold weather holding it stationary. Some open water during the week which has been filled up with solid ice during the past few nights.

Alpena, April 18.—River and bay clear of ice, none to be seen at Thunder Bay; a little floating ice in sight at Middle Island.

Oscoda, April 13.—Ice extends out a quarter of a mile and soft clear water beyond.

East Tawas.—April 15.—Ice in bay partly gone out, balance very rotten.

Port Huron, April 17.—Ice field was driven from the west shore of lower Lake Huron Saturday evening (15th), by southwest winds and continues beyond vision. Small craft now running north as far as Port Hope; no ice in St. Clair river.

## LAKE ERIE.

Conneaut Harbor, April 14.—The ice has left this harbor and is now only to be seen far out in the lake.

Erie, April 15.—The ice, under the influence of the warm weather of the past week, has become somewhat soft and honeycombed, without, however, giving any other evidence of breaking up.

Buffalo, April 17.—The ice fields remain in about the same condition as that of last week, being visible as far as the eye can reach outside the breakwater. It is badly broken up and rotting very fast. Large field floated down the Niagara river during the past week. It is believed navigation could be now conducted without much hinderance.

## LAKE ONTARIO.

Cape Vincent, April 18.—Ice still solid in foot of lake and head of river. No ice below Cape Vincent or Kingston.

NORMAN B. CONGER,

Local Forecast Official, Marine Agent.

## THE SHIPYARD COMBINE.

A New York despatch dated Wednesday says: "A meeting of the American Ship Building Co., which was to have been held to-day for the purpose of electing permanent officers, was postponed until tomorrow. The presidency is said to be between James C. Wallace, of the Cleveland Ship Building Co., and W. M. Brown, of the Chicago Ship Building Co., and a report late tonight states that the latter will be the successful candidate. The organization of the American Ship Building Co., an absorption of the Great Lakes interest, incorporated in New Jersey with a capitalization of \$30,000,000, was advanced yesterday by the temporary board of directors at No. 36 Wall street. The Central Trust Co., of this city, was made registrar of the stock and the Corporation Trust Co., of New Jersey, the transfer agent. The board authorized the issue of \$20,000,000 of stock, half common and half preferred. The company then took title to the following properties: Cleveland Ship Building Co., Globe Iron Works Co., and Ship Owners' Dry Dock Co., of Cleveland; Chicago Ship Building Co., of Chicago; Superior Ship Building Co., of West Superior; Detroit Ship Building Co., of Detroit, and the Milwaukee Dry Dock Co.

It is reported also that additional property will be acquired at the meeting tomorrow.

## APPOINTMENTS OF MASTERS AND ENGINEERS.

LAKE ONTARIO & BAY OF QUINTE STEAMBOAT CO., Kingston, Ont.—Steamer Hero, master, Wm. Bloomfield; engineer, Robt. McEwan. North King, master, John Jarrell; engineer, O. J. Hickey.

THE compliments of the RECORD are due the firm of Messrs. John Bliss & Co., New York, for a copy of their annual Nautical Almanac, an abridgment of the National ephemeris. Messrs. Bliss & Co. are the leading nautical opticians of the Empire City, and their reputation is universal.

"THE recent hurricane weather on the Atlantic and the consequent losses to shipping," says a dispatch from London, have called attention to the Board of Trade's action in abolishing the winter North Atlantic mark for vessels over 330 feet long, and an agitation for its re-establishment has begun. It appears that since January 20 nine steamers, of 26,754 tons, of £529,000 in value, and having 300 persons on board, have been lost. It is added that they were all classed 100 A at Lloyd's, but it is believed they were exempt from the winter North Atlantic mark.

## FLOTSAM, JETSAM AND LAGAN.

H. A. Townsend, of Algonac, Mich., has qualified as master of the George T. Hope.

Captain Henry Thompson, of Toledo, will command the steamer Massachusetts this season.

Messrs. Elder, Dempster & Co.'s new vessel, the E. D. & Co., which has just been launched at Hamburg, is the first steamer which has ever been built in Germany on English account.

"The Cruise of the Cachalot," by Frank T. Bullen, is an illustrated book of 400 pages that will interest every one interested in whale ships. D. Appleton & Co., New York, are the publishers.

The steamer Armenia was purchased on Tuesday by David Dean of Richard's Landing, St. Mary's river, from Calvin & Co. The boat will be employed in the cedar trade in the Algoma district.

It is stated that the new British torpedo-boat destroyer Albatross, just completed, attained a speed of 33 knots on her trial trip this week. The vessel is 237 feet long and 21 feet in beam, with a draft of 8½ feet.

The Canada Atlantic Railway has leased a line of barges from the Kingston & Montreal Forwarding Co. to run between Coteau and Montreal. Last year the railroad paid the forwarding company a stipulated sum per bushel for the service.

Grain elevators at the head of the lakes are full to overflowing. Duluth elevators contain upwards of 20,000,000 bushels and West Superior over 16,000,000 bushels. Vastly greater storage capacity is now being arranged for, as the product will increase immensely in the future.

The total stock of grain in store at Montreal on April 1, 1899, was only 566,897 bushels, against 1,484,435 bushels a year ago. Of this total (1899) there were 450,856 bushels of oats, 38,232 bushels of peas, 33,167 bushels of buckwheat, 18,931 bushels of wheat, 17,590 bushels of corn, 5,506 bushels of barley and 2,595 bushels of rye.

The Victoria, B. C., Trades and Labor Council have passed a resolution drawing the attention of the Minister of the Interior to the published report of the importation of 20 men from Pittsburg, Pa., to work on the construction of a steamer at Lake Bennett. This, the council holds, is an infringement of the alien labor law. The minister will be asked to appoint an agent in Victoria to assist in the enforcement of the law.

Since July 1, twelve merchant vessels have been named by their owners after Admiral Dewey, six after Admiral Sampson, two after Admiral Schley, one for Ensign Worth Bagley, and one for "Bob Evans;" two for General Joe Wheeler and one for Fitzhugh Lee. War memories are also preserved in the merchant marine thus far this year by one Maine, three Oregons, two Iowas, two Olympias, one Rough Rider and two Manilas.

Capt. William A. Andrews is in Atlantic City making arrangements for the building of a 17-foot aluminum canvas-covered folding cockleshell boat, with which to take his seventh and last voyage across the Atlantic Ocean. The boat will be named the Superba. He expects to leave Atlantic City on June 17 for the Azores, and go thence to Nice, France. He says that 60 days after leaving here he will carry his boat under his arm through Paris and exhibit it at the exposition.

## OUR FOREIGN TRADE.

The exports of domestic merchandise in 1897 amounted in round numbers to \$1,235,000,000, and in 1897 to \$1,080,000,000. The increase in 1898 over 1897 was \$155,000,000, in round numbers.

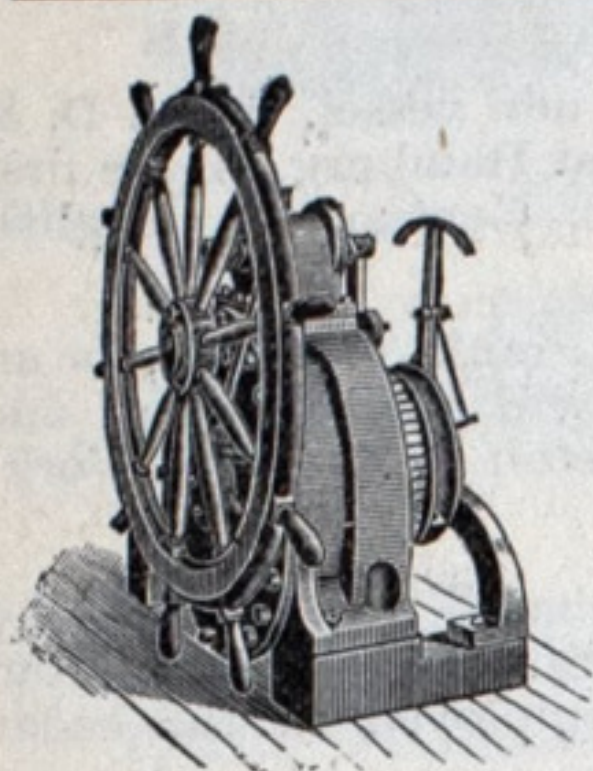
Meantime the imports decreased, as compared with 1897, \$109,000,000. The exports of domestic merchandise as compared with the highest exportation of any previous year were \$153,701,810 greater.

There has been a gradual decline in imports during the last ten years. The highest mark was in 1892, when they reached \$41,000,000. There was not much variation, however, in the years 1890-2. They fell off in 1893, but increased in 1895 to over \$800,000,000. In 1898 they amounted to about \$653,664,634, which was the lowest figure since 1885, and the population has increased about 15 per cent. since 1885. There was a steady excess of exports from 1888 to 1892. In the last three years the excess of exports has increased enormously, running up to \$621,260,535 in the calendar year 1898.

Agriculture shows the largest increase in the aggregate, but manufactures show a large increase in proportion to the amount exported, and this is especially noticeable in the exportation of iron and steel, refined mineral oils, copper and manufactures of copper, leather of various kinds and cotton goods. In 1896 the exportation of iron and steel amounted to less than nine millions of dollars. The exportation of refined mineral oils amounted to twenty-one millions in 1896, and over fifty-one millions in 1898. The exportation of copper and manufactured copper amounted to less than half a million dollars in 1896 and ran up to \$32,180,872 last year. The exportation of leather goods has increased in like proportion, reaching over twenty-one millions of dollars in the last calendar year.



## Queen City Patent Hydraulic Steerer.



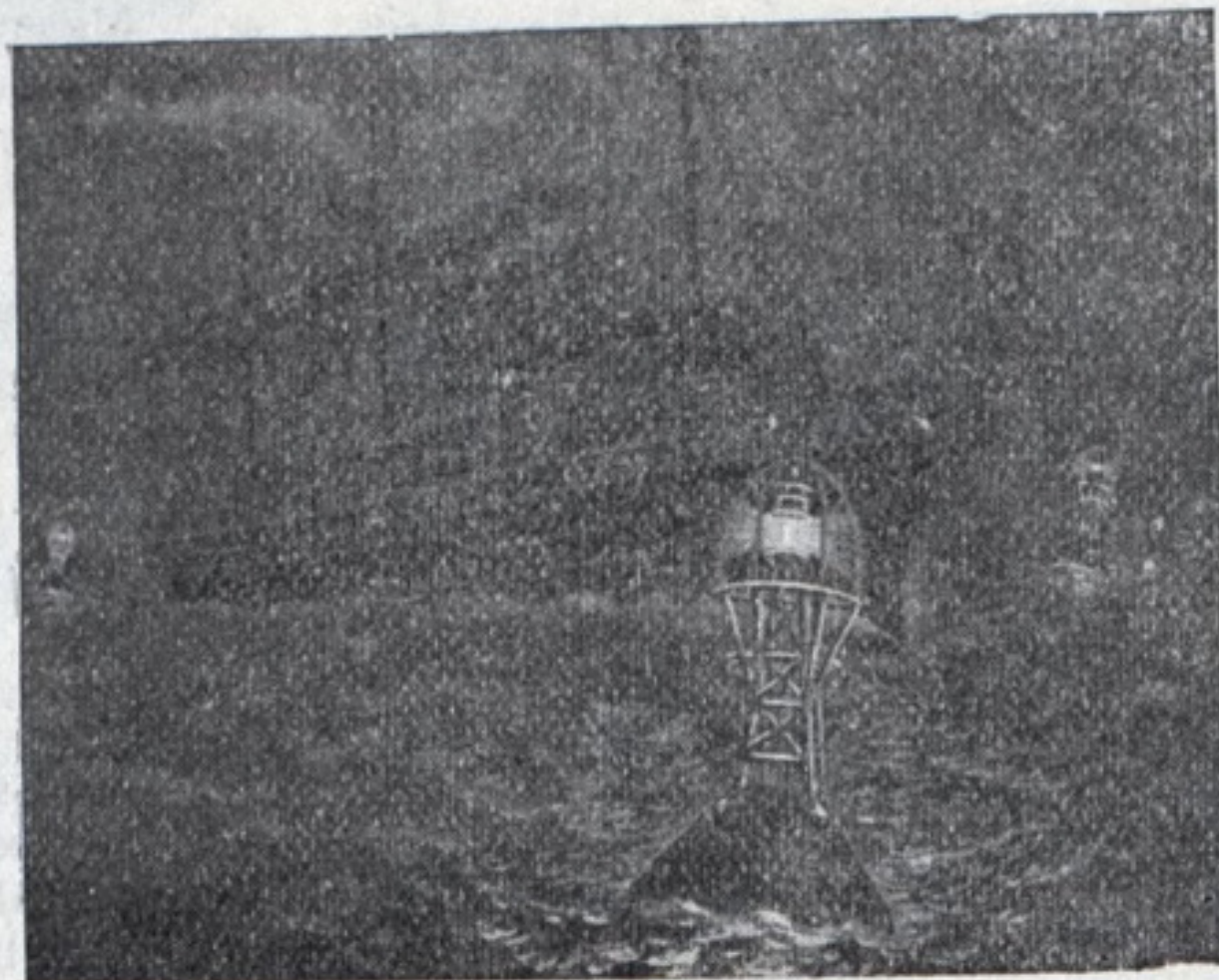
The best and most reliable.  
Generates no heat in pilot house.  
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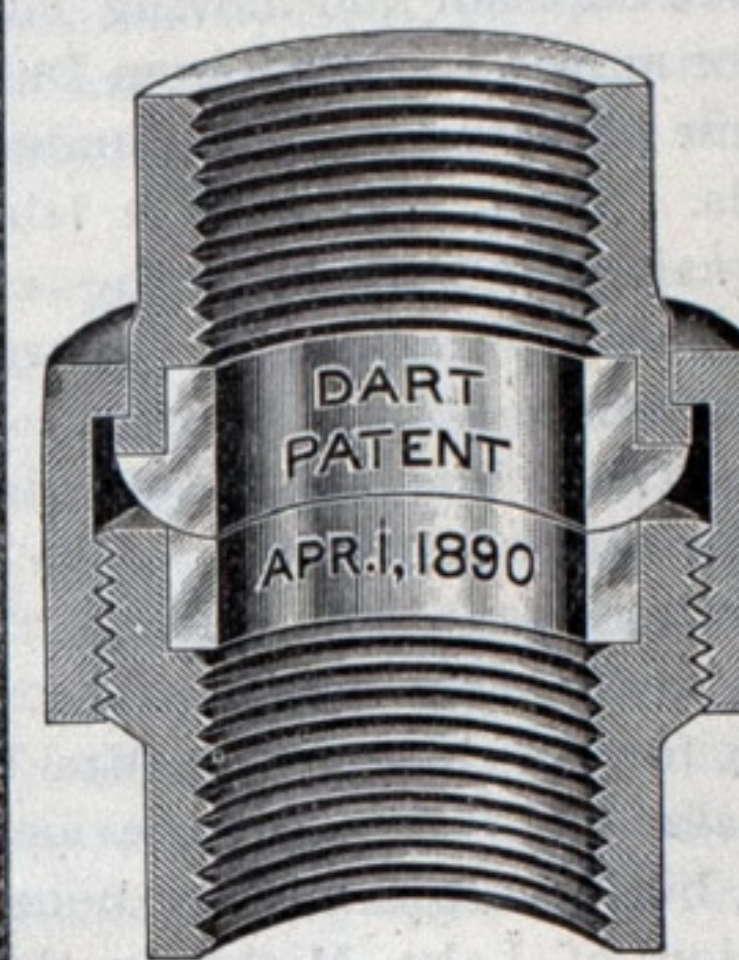
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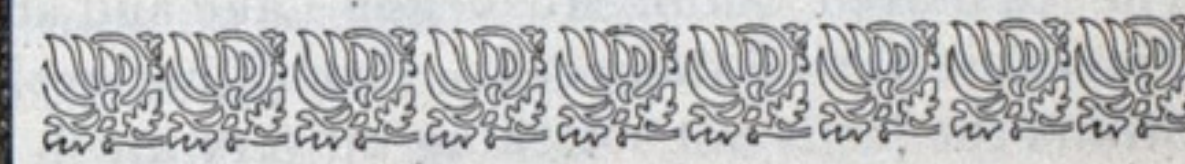


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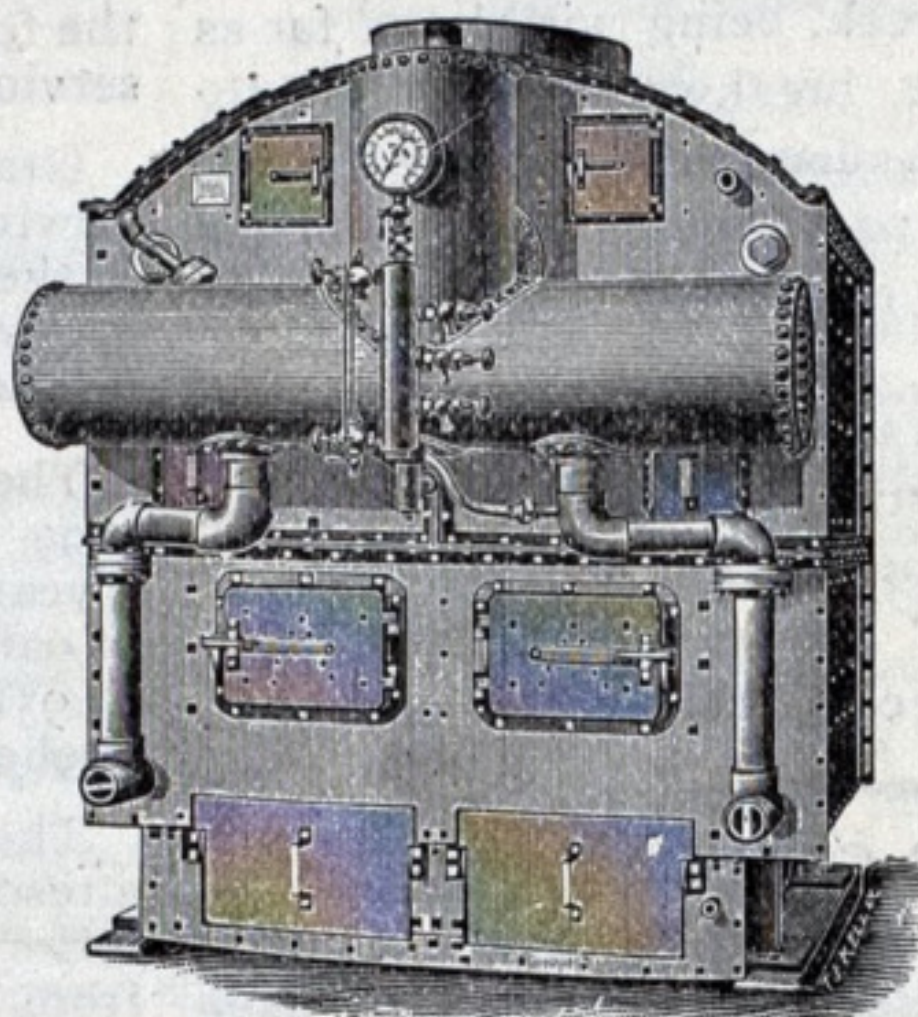
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## W. A. McGILLIS & Co.

### DREDGING.

57 WADE BUILDING. CLEVELAND, OHIO.

### SHIPPING AND MARINE JUDICIAL DECISIONS.

(Collaborated specially for THE MARINE RECORD.)

**Injury to Stevedore—Negligence of Vessels—**It is the custom to leave between-deck hatches open when a vessel is in port, of which custom a stevedore working on the ship is presumed to have knowledge. *The J. W. Taylor*, 92 Fed. Rep. (U. S.) 192.

**Navigable Waters.**—The fact that the use of a navigable stream for commerce or navigation is insufficient does not destroy the states's proprietary rights, nor authorize its appropriation for individual use. *People vs. Page*, 56 N. Y. Supp. 834.

**Navigable Waters—Land Commissioners—**Laws 1894, c. 317, sec. 70, subd. 5, permitting commissioners of the land office to authorize the use of lands of the state under water for certain purposes therein stated, did not permit them to authorize the construction of a permanent dam in a navigable stream. *People vs. Page*, 56 N. Y. Supp. 834.

**Collision—Vessels Meeting—Unwarranted Change of Course—**Where two meeting vessels, by keeping their courses, would pass to the left of each other in safety, one of them, which insists on the naked right of passing to the right, and changes her course when it is attended with danger, is in fault for a collision which resulted. *The City of Macon*, 92 Fed. Rep. (U. S.) 207.

**Construction of Charter Party—Authority of Master—**While a master has no power to set aside the contract made by the charter party, yet where, at the time of loading, questions arise between the ship and the charterer as to the proper construction of minor clauses in the contract, in the absence of the owners, the master, as their agent, must necessarily deal with the same, and his construction and agreements in relation thereto are binding on the owners. *The Edward H. Blake*, 92 Fed. Rep. (U. S.) 202.

**Towage—Loss of Tow—**In an action for the loss of logs while being towed by defendant, the petition, in addition to alleging want of skill on the part of the master, alleged that the loss was caused by the over-loading of the tug, attempt to navigate in a dangerous storm, and neglect to enter an available place of safety. Held, that plaintiff's failure to produce evidence as to the master's incompetency did not entitle defendant to a nonsuit. *Jose et al. vs. Stetson et al.*, 56 Pac. Rep. (Wash.) 397.

**Navigable Waters—Title to Bed—Colonial Grant—**A colonial grant was of land along both sides of the Hudson (Mohawk) river, and extending from each side backward into the woods 24 miles, and all the islands, rivers, and creeks appertaining thereto, and was in confirmation of a former Dutch grant, which, under the Dutch law, would not vest

title to land under public streams. Held, that this did not carry title to the bed of the river as against the state, it being navigable at that point. *People vs. Page*, 56 N. Y. Supp. 834.

**Appeals in Admiralty—**A transcript of appeal in admiralty should contain all the evidence adduced on both sides. When such evidence is not reduced to writing in the lower court, and there is no rule of that court requiring it to be reduced to writing, it would seem that an appeal can only be had on the merits, where the evidence adduced appears by an agreed statement of facts, or where a statement is made by the court of the evidence adduced, or of the facts proved. *The Edward H. Blake*, 92 Fed. Rep. (U. S.) 202.

**What is a Derelict—**A bark which has broken from her anchorage in an arm of the sea; drifted on a rocky beach in a heavy storm, been made fast to the trees by the captain and crew; filled with water during the night; is deserted the next day by all hands, they taking with them the ship's papers, compasses, side lights, and their personal effects, and the vessel, two days later, goes adrift again, and is found drifting before the storm, 14 miles from her anchorage, with no one on board, held to be a derelict. *The Canada*, 92 Fed. Rep. (U. S.) 196.

**Navigable Waters—Bridges—Negligence in Management.**—In attempting to open a drawbridge maintained by the county across a navigable stream, for the passage of a vessel in tow of tugs, the casting which moved the bridge broke. The bridge tender then refused to permit the tugs to swing the bridge, and the vessels were delayed from 3 o'clock in the afternoon until 10 o'clock the following morning, until repairs could be made. It appears that the tender had complained to the county board that the bridge was difficult to swing, and workmen had been sent to repair it, whose defective work caused the breakage. Held, that none of such facts established negligence on the part of the county authorities or their servants which rendered them liable in damages for the delay of the vessels. *Pettit vs. Board of Chosen Freeholders of Camden County, New Jersey*, 91 Fed. Rep. 999.

**Salvage—Amount and Apportionment—**A steamer found a derelict bark drifting in a storm, and in imminent danger of destruction. Being unable, on account of the storm, to take her to a safe harbor, the steamer took her to the most available place, and, her anchors being carried away, beached her. The steamer refused to permit the claimants to assist in her rescue, and afterward succeeded in bringing her into port, and filed a libel for salvage, the right to which was denied by the claimants. The original value of the vessel and cargo was estimated at \$60,000; but, owing to their damage, which the evidence showed to have been mostly received before she was found by the steamer, they sold at marshal's sale for \$2,000. Held, that, under the circumstances, the salvors would be awarded one-half of the net

proceeds, to be equally divided between the steamer and her crew. *The Canada*, 92 Fed. Rep. (U. S.) 196.

**Duty to Light Hatchways.**—Where the charters are charged by the chartering party with the duty of discharging, reloading, and coaling a vessel while in port, and have contracted with a firm of stevedores to do the work, and the vessel is in their charge for that purpose, the vessel owes no duty to keep the between-deck hatches closed, or, if open, lighted, to protect a stevedore from injury in going after dark to deposit or recover his coat in a part of the vessel not connected with his work; nor is she liable for an injury received by him under such circumstance by falling through an unlighted hatchway, which had been prepared to receive coal, because of a custom of the vessel to furnish lights for the use of the contractors, which were disturbed by the stevedores as required by their work, it not appearing that the hatch was opened by the vessel. *The J. W. Taylor*, 92 Fed. Rep. (U. S.) 192.

### CRAFT NEEDED BALLAST.

With many a hitch of his trousers and pulls at his forelock in respectful salute to Justice Leech, Jack Collins, able seaman of Uncle Sam's Navy, was navigated up to the court room railing by the turnkey on the charge of cruelty to animals to-day.

"He had a paving stone tied to the tail of a horse he was riding out Boston street, Your Honor," said Round Sergeant Riefner, who had arrested him.

"What was that for?" sternly asked the magistrate.

"Well, admiral, that wasn't no cruelty to animals, as this officer says, at all," blurted Jack. "I hired that bony craft outside for a short cruise ashore. Soon after getting under way I found the bloomin' old packet would'n't steer a little bit. She was all down by the head and tacked about the street when the wind was fair astern. Try as I would I couldn't get steady steerage way on her, and she drifted to windward just as often as she did to leeward. Then thinks I she's too light by the stern, as her heels were constantly liftin' and racing just for all the world like our propellers on the ship when she tosses on a big sea. 'She wants more weight aft,' says an old shipmate of mine that I met, and then I just got him to help me come to the anchor while I shipped a little ballast aft. That's all, Your Honor. All shipshape and above board and no reason in the world why this blue and brass-bound corvette here should have overhauled me at all."

"Dismissed," said the Justice after Jack had agreed to jettison the ballast and take the "craft" home "in tow," which meant lead the ancient steed back to the stable.



**FORCED DRAUGHT FOR MARINE BOILERS.**

Although forced draught for increasing the rate of combustion was used in the United States Navy during the Civil War, it did not come into general use for naval vessels until about 1882, and in the merchant service still later, but since that time its use has become universal. Indeed, were it not for forced draught, boiler weights would be so great as to have long ago set a limit to speeds of the faster classes of vessels. When natural draught alone was used, the maximum rate of combustion with the best free-burning coal and good chimney draught did not reach twenty pounds per square foot of grate. With forced draught in large cylindrical boilers there are now numerous reliable records of forty pounds per square foot, while in locomotive and water-tube boilers eighty pounds is now a common rate, and data have been published of over 100 pounds. While the economy of evaporation at these high rates of combustion is not so great as under natural draught, the enormous reduction in boiler weights is very marked. Trials of the boiler of the United States torpedo-boat Cushing, for example, show an increase in i. h. p. per ton of boiler of

over fifty per cent. when the rate of combustion is increased from twenty-four to forty pounds per square foot of grate, which means a decrease in weight per i. h. p. of over thirty-three per cent. Except on Mr. Howden's part, the question of economy under forcing was for a long time ignored, designers being content with the great gain in power. At the present time, however, the question of economy under forcing is receiving great attention, and we may confidently anticipate this as one of the features of progress in marine engineering.—Commodore George W. Melville, U. S. N., in Cassier's Magazine.

**TRADE NOTES.**

The Lidgerwood Manufacturing Company, of Brooklyn, N. Y., has received an order for a hoisting plant for handling coal near Christiania, Norway.

The Cleveland Twist Drill Company are building an addition to their plant at Cleveland.

The absence of building of medium-sized sailing vessels suitable for lumber and general trade for some years past

now leaves the supply of such vessels on the Atlantic coast in a very depleted condition. The losses also of this craft have been very heavy during the past year, and as at the present time good freight rates are offering there are very few vessels to meet the demand and it will take a good while before vessels can be built in sufficient numbers to supply the want. With the absence of sailing vessels the few steam vessels on the coast will have to engage in the trade formerly left to the sail vessels and before the additional fleet is ready the coasting trade may be entirely revolutionized and be all done by steam craft. The Atlantic coast market offers a good field for good serviceable lake schooners and steamers and owners of such vessels would, without doubt, find ready purchasers for their property.—Maritime Register, New York.

The most important question which will occupy the attention of the Dominion Parliament this season is the fast Atlantic service. A proposal has been made that the government shall bring forward a bill providing for a subsidy of £200,000 for ten years.

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Lake Marine Department, GEORGE L. McCURDY, MANAGER.  
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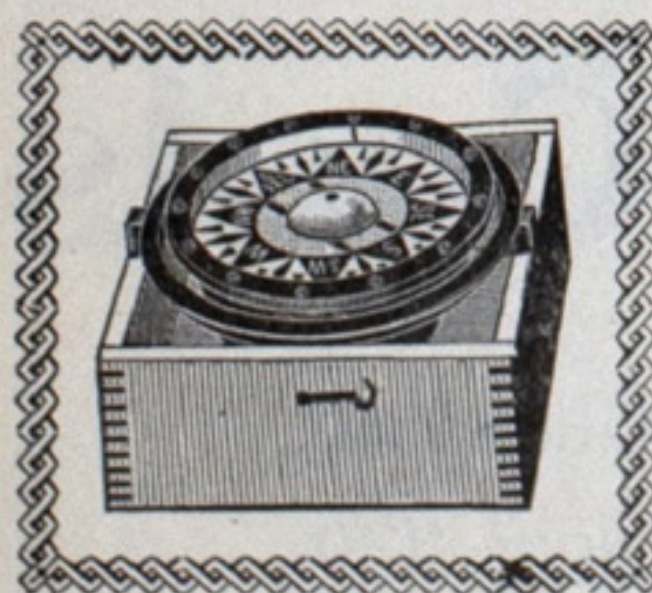
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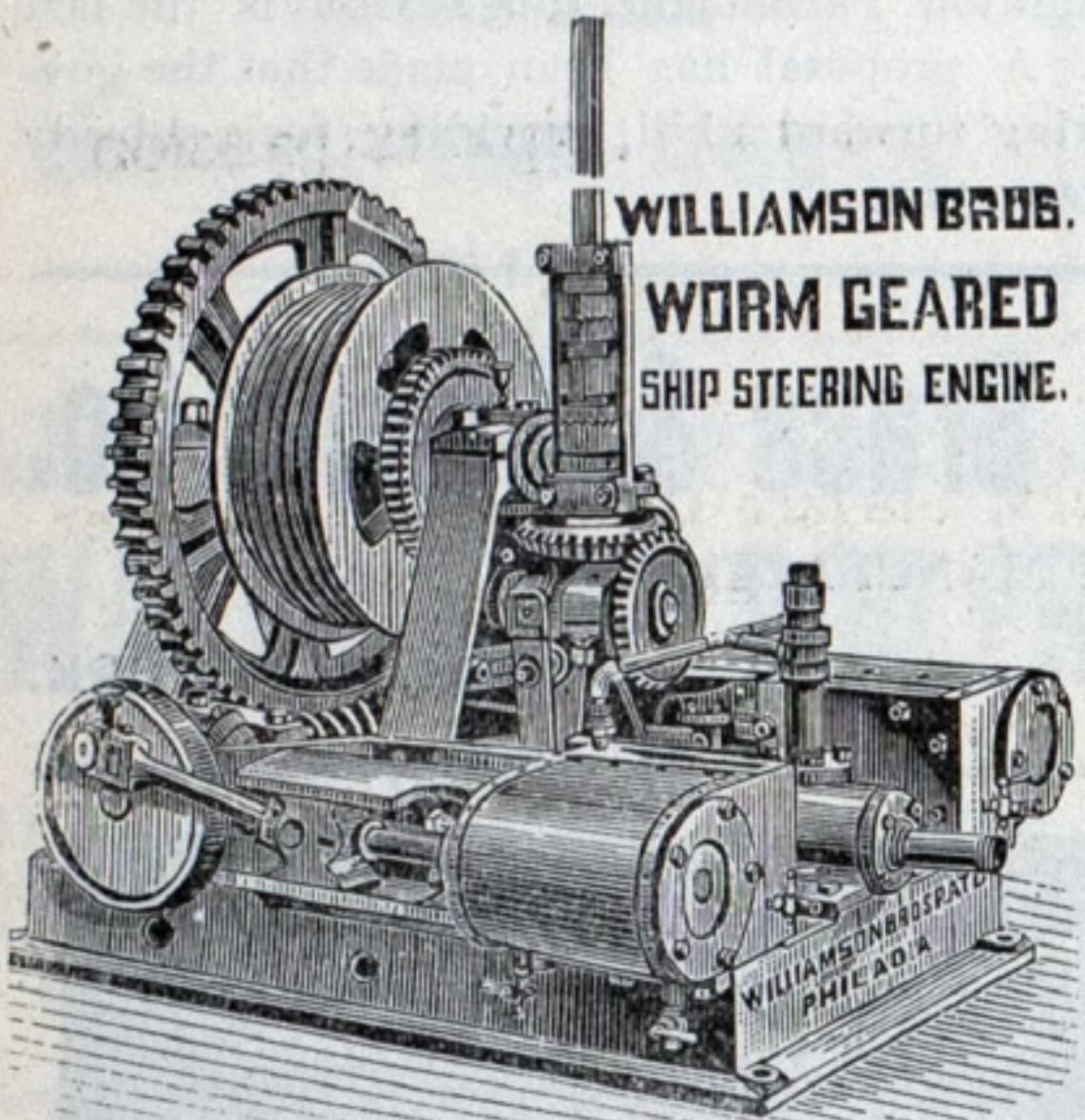
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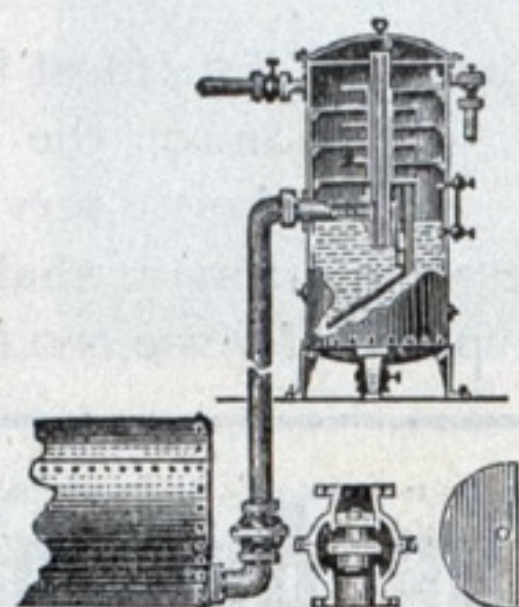
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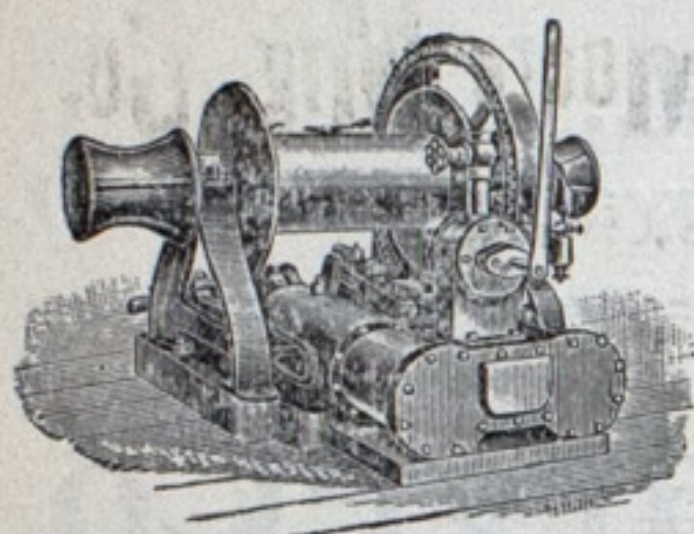
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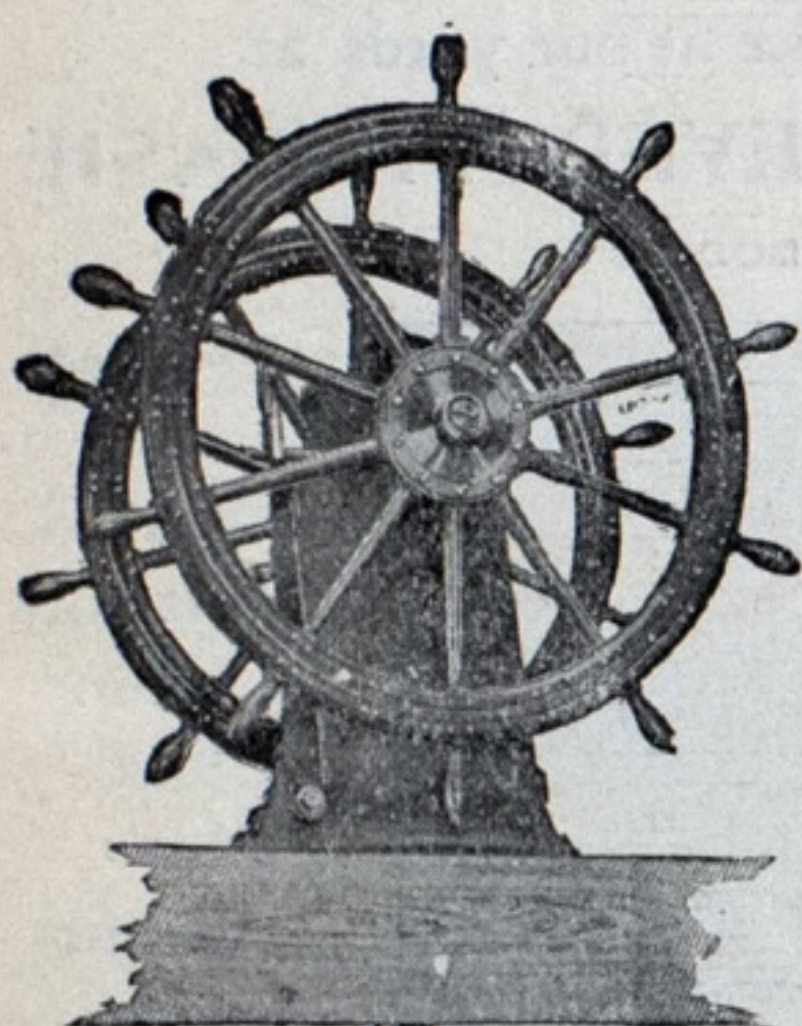
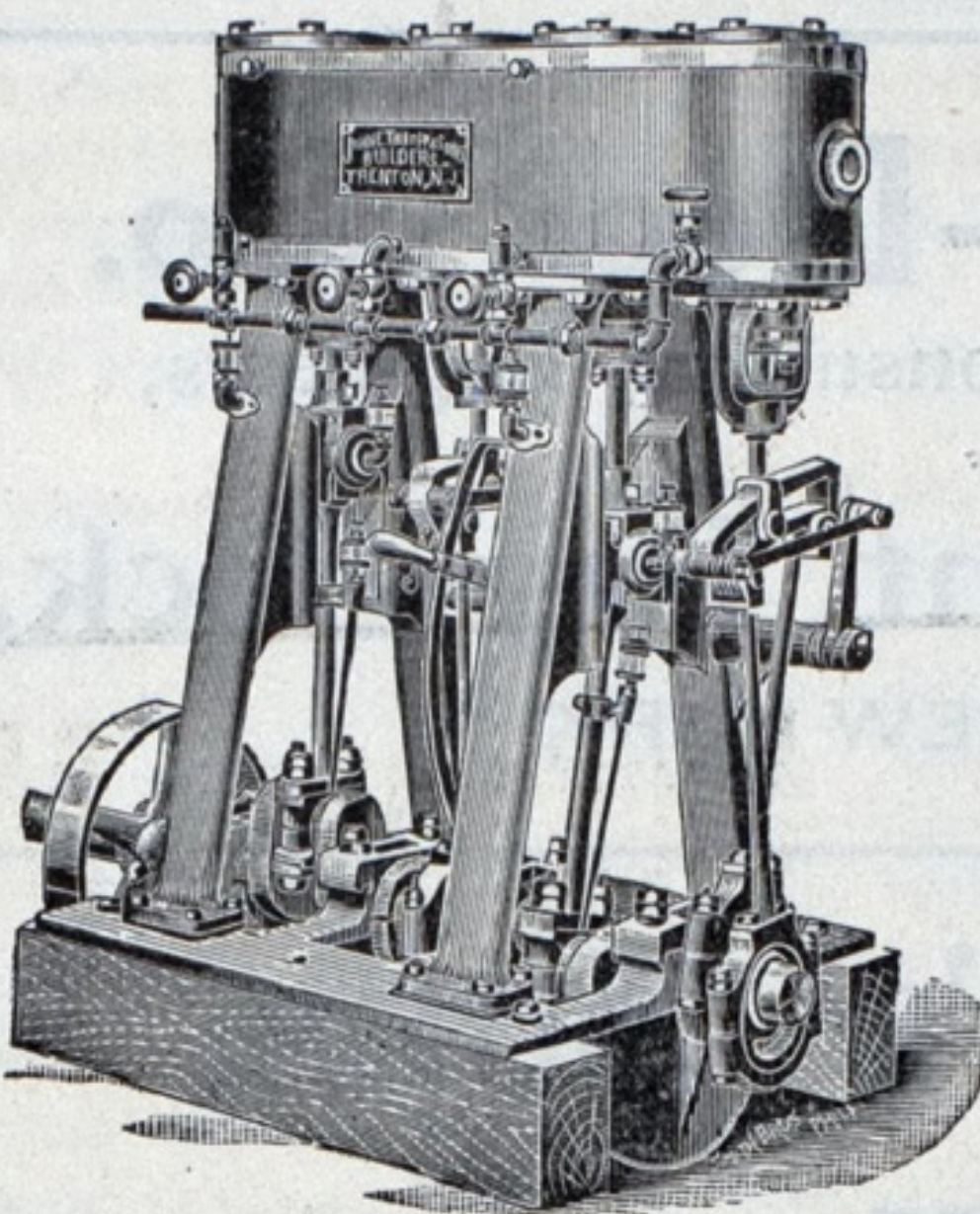
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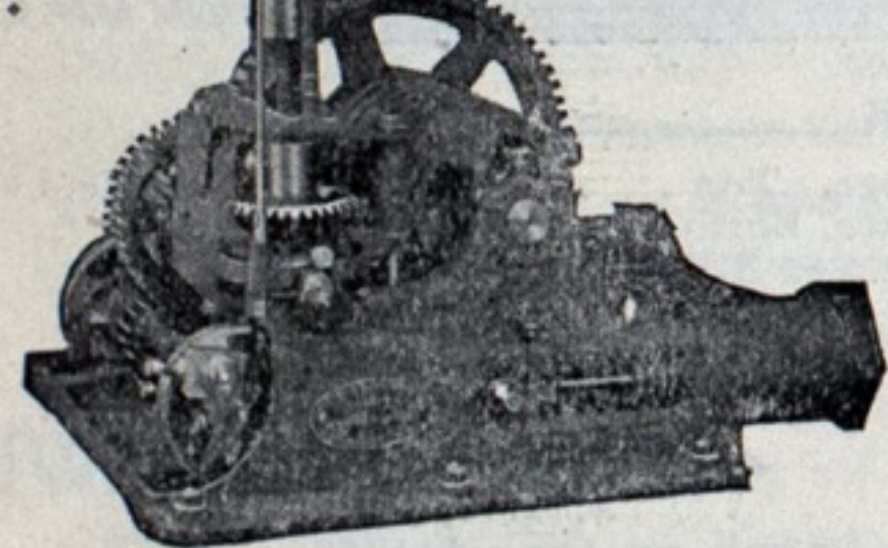
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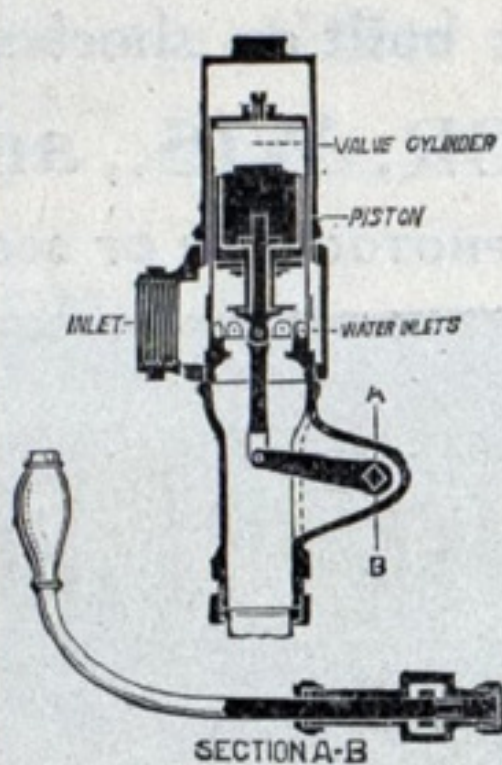
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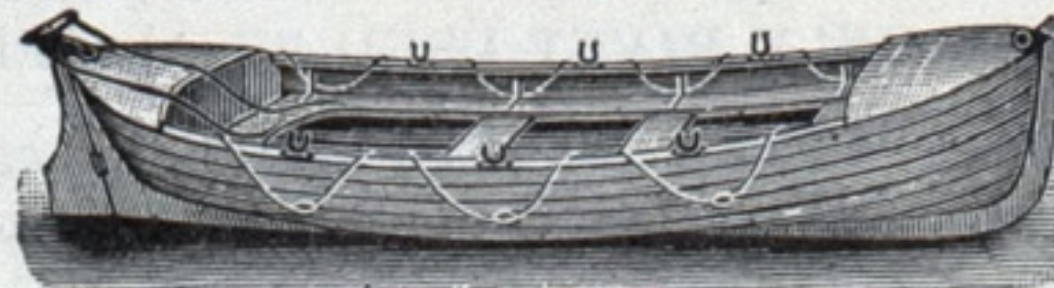
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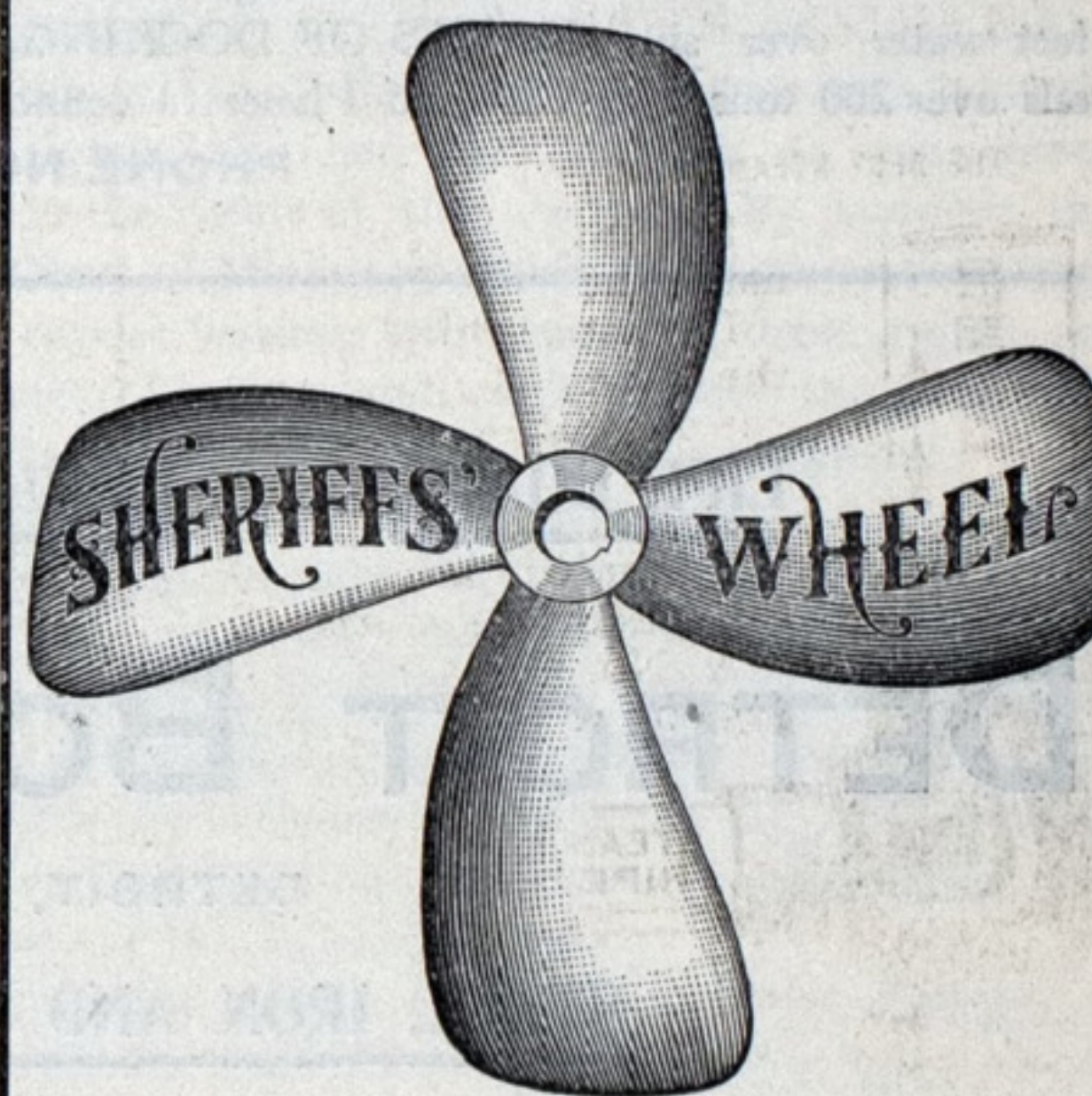
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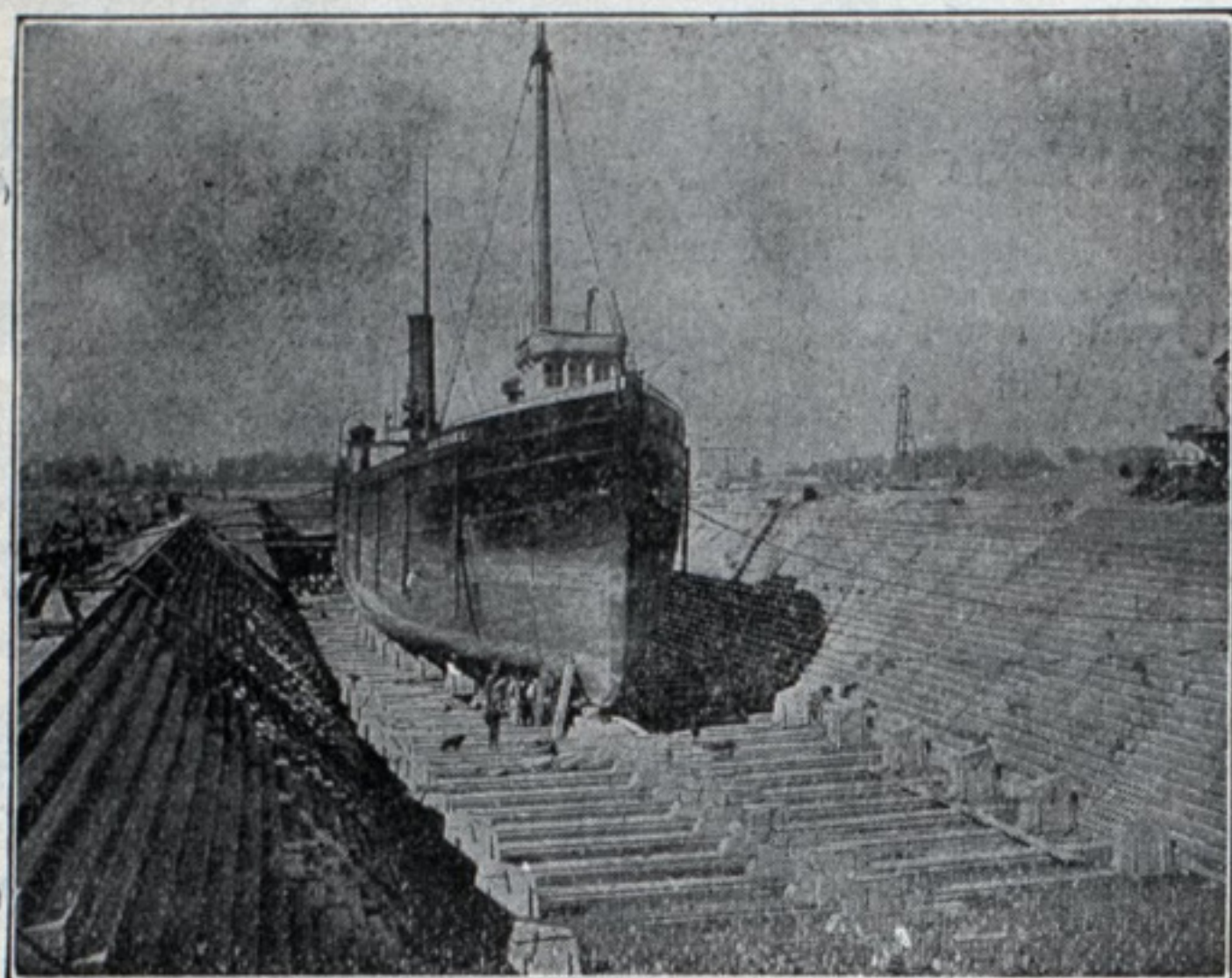
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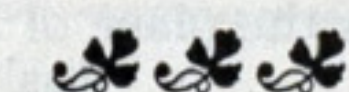
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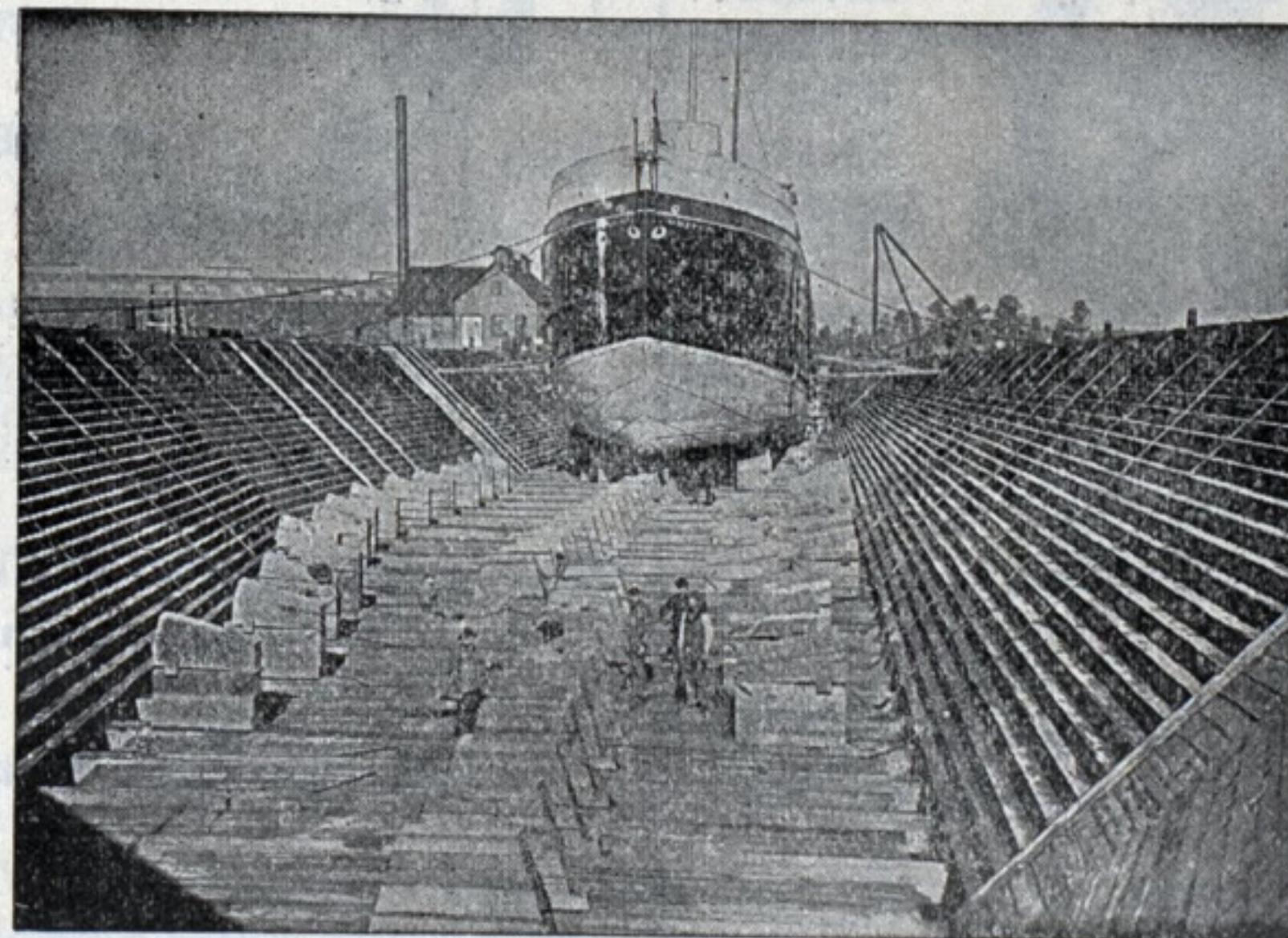
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